G-E Designs New TVA Model; Other Firms Revise Prices

(Concluded from Page 1, Column 2)

pects to submit a refrigerator of an entirely new design to the EH & FA early in April, and that he has received definite assurances from a number of other manufacturers that they will submit models of new and different designs, and at a lower price, in the near future.

"We are confident that prices of refrigerators as approved for the Tennessee Valley market will be between $70 and $80," declares Mr. Lilienthal. This price is to be compared with present installed prices for the same equipment of around $115. And with the increase in volume we may anticipate further reductions in the future."

The new refrigerator submitted by General Electric is combined with an electric range, also new in design, forming an "electric kitchen" unit.

Mr. Lilienthal, who is also a director of the TVA power program, indicates that after negotiation with the TVA, recently lowered rates for electricity in the Valley localities served by private utilities will make it possible for the $10,000,000 customer-credit set-up established for the EH & FA to be extended through most of the Valley and also in some adjacent zones.

Majestic to Be Sold By Receiver April 16

(Concluded from Page 1, Column 4)

real estate and buildings located at 5801 Dickens Ave., Chicago, interests in subsidiary companies (notably the Columbia Phonograph Co.), accounts and notes receivable, good will including patents, trade names, trade marks, copyrights and design applications, machinery and equipment used in the manufacture of refrigerators (both cabinets and machines), radios and radio tubes, and a large inventory of raw materials and completed merchandise.

The inventory may be examined at the Dickens Ave. plant by interested parties. All bids must be accompanied by a deposit of at least 25% of the amount bid. Pre-sale questions should be addressed to Frank M. McKey, receiver-in-bankruptcy for the Grigsby-Grunow Co., First National Bank Bldg., Chicago (telephone: Randolph 2371).

Iowa & Nebraska Dealers Visit Grunow Plant

(Concluded from Page 1, Column 2)

following which they repaired to the Lake Shore Athletic Club, where they were addressed by H. C. Bonfig, vice-president in charge of sales, and Dr. J. D. Jordan, head of the research laboratories.

That night the dealers, squired by Earl Macke and Advertising Manager Duane Wanamaker of General Household Utilities, went in a body to the Chez Paree Club, where festivities were maintained until early morning hours.

Monday, April 2, 50 dealers from the Griffith-Victor Distributing Corp., of Cincinnati, headed by Charles Hyde, arrived in Chicago to be put through the same paces. Monday, April 9, a similar delegation is expected from Brown Supply Co. of St. Louis.

Refrigeration Valve Code Hearing Apr. 9

(Concluded from Page 1, Column 3)

fair trade practices only, the labor provisions being covered by the basic code.

Most important provisions in the code are articles V, VI, and VII, dealing with sales below costs and an "open price" basis of selling.

Article V proposes that every member of the industry shall use an accounting system for determining his allowable cost which conforms to the principles of the uniform method of accounting to be formulated by the Supplementary Code Authority and approved by the Administrator.

When the Code Authority determines that an emergency exists in the industry and that the cause thereof is destructive price cutting such as to render ineffective or seriously endanger the maintenance of the provisions of the code, the Code Authority may cause to be determined the lowest reasonable cost of the products of the industry, such determination to be subject to hearings or modifications required by the Administrator.

Thereafter, during the period of the emergency, it shall be deemed an unfair trade practice for any member of the industry to sell or offer to sell any products of the industry for which the lowest reasonable cost has been determined, at such prices or upon such terms that the buyer will pay less than the lowest reasonable cost of such products.

Article VI bars sales of products below cost—this provision differing from that of Article V in that under Article V the Code Authority can determine the "lowest *reasonable* cost," while Article VI bars sales at a price lower than the *seller's* cost. This provision would not apply to dropped lines, or seconds, or inventories which have to be disposed of for cash.

Article VII proposes that if the Supplementary Code Authority determines that it has been the generally recognized practice in the industry to sell certain products on the basis of net price lists, or price lists and discount assets, each member of the industry shall, within 10 days after notice of such determination, file with the Supplementary Code Authority a net price list, or price list and discount sheet, in such form and for such products as the Supplementary Code Authority may prescribe, and the Supplementary Code Authority shall immediately send copies thereof to all known manufacturers of such products, and such lists shall be available to all interested parties.

Revised price lists may be filed from time to time thereafter with the Code Authority, to become effective not less than 10 days after the filing.

Copies of such revised lists, with notice of the effective date, shall be immediately sent to all members of the industry, and shall be available to all interested parties.

Any member of the industry may then file revisions of his price list which shall become effective at the date when the revised list first filed becomes effective, provided that he shall not establish prices lower, nor discounts greater, nor conditions of sale more favorable than those contained in the revised list first filed.

Section (b) of Article VII declares that each member of the industry recognizes that it may have to compete on certain classes of refrigeration fittings with those made by other industries (principally the screw machine products industry) and not covered by its code, in which case the member of the refrigeration valves and fittings industry so quoting in competition with other industries will insofar as possible, be governed by this code or the code as it applies to the other industry.

Section (d) Article VII provides that in the event that the Supplementary Code Authority finds that any filed prices would cause instability in the market, the Supplementary Code Authority may require the producer filing such price, to establish that such price does not involve a net return to such producer less than his cost, determined by the formula prescribed by the Code Authority.

Article VIII lists an additional number of unfair trade practices, of the type defined in most of the codes.

The Supplementary Code Authority which will administer the code will consist of the following:

One member who shall be a member of the industry, elected by a majority vote of all members of the industry present in person or by proxy, each member to have one vote.

One member who is not a member of the Refrigeration Valves and Fittings Association, elected by a majority vote of all the members of the industry, present in person or by proxy, each member to have one vote.

Three members elected by 51 per cent vote of members of the Association present in person or by proxy, weighted on the basis of one vote for each member and one additional vote for each $25,000 of annual sales in the previous calendar year reported by the Code Authority, provided, however, that no one member may cast more than 33⅓ per cent of total number of votes cast.

In addition the Administrator may appoint a member of the Supplementary Code Authority who without vote shall serve without expense to the industry, unless the Supplementary Code Authority agrees to pay such expense.

Rex Factory Producing 750 Cabinets Daily

(Concluded from Page 1, Column 4)

in 1934 make four or five times the number of cabinets it produced last year.

Orders now on hand call for twice the number of cabinets manufactured during all of last year.

In 1933, Mr. Myers states, no more than 600 men were employed at any time, and the highest production mark attained was 600 cabinets per day.

This year, 20 per cent of all cabinets made by Rex are all porcelain. Last year, the figure was 18 per cent. Proportion of all porcelain boxes has increased each year since the company began making cabinets, according to the sales manager.

Ball to Head Grunow Executive Committee

(Concluded from Page 1, Column 2)

the Nickel Plate railroad.

President William C. Grunow also increased his holdings in the company and, as the largest stockholder, retains his position as active head of the operation. Immediately following the conclusion of the negotiations last week, President Grunow left for his home in Phoenix, Ariz., to take a short rest.

General Household Utilities factories in Chicago are now turning out 600 Grunow refrigerators a day. According to H. C. Bonfig, vice-president in charge of sales, enough unfilled orders are now on hand to keep the factories running at this rate until past the middle of June.

THE NEWSPAPER OF THE INDUSTRY

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NEWS ABOUT DEALERS

Staff Writer Tells What He Sees And Hears

By Elston D. Herron

By no means were the 125,000 people of Ft. Wayne, Ind., dealt as staggering a blow during the depression as those in some of the other cities of Indiana.

Comparatively speaking, the town's economic condition is quite good, and the road back to complete recovery is not so long nor so tough for its merchants and industries — which range from gasoline pump manufacturing to silk weaving.

Consequently, refrigeration dealers in Ft. Wayne don't see anything especially remarkable in the fact that they expect '34 sales to be excellent. They did all right *last* year, and the year before that.

Fort Wayne, Ind.

First call we made on a refrigeration merchandiser was at the store of the C. H. Lines Co., which wholesales Leonard in 16 counties, and retails in Ft. Wayne.

As in Indianapolis, refrigeration selling was kept from getting off to an early start by cold spring weather, Mr. Lines explained, but the outlook for the rest of the year is good.

"My nine dealers, however, have already bought and paid for all but five as many refrigerators as they did during all of 1933," he said. "And this company has already bought as many Leonards as we purchased up to May 19 of last season."

The distributor expects to do 250% more wholesale business than in '33. He is starting five outside retail men, whereas last year he had none. He made 67 retail sales in 1933, however, and thinks that will be doubled this year.

"More than for any other reason, my dealers expect to do a big job this year because of the sales and advertising help the factory is giving them," he declared.

The CWA brought some extra money into Ft. Wayne, Mr. Lines said, but appliance dealers are getting it indirectly, rather than from the CWA workers themselves.

Just getting under way with a new management is the Refrigeration Equipment Co., Frigidaire distributor serving dealers in seven counties and doing retail selling in Ft. Wayne. Household sales manager is R. H. Polhamus.

Since Feb. 1, when the firm started business, 20 household models have been sold, most of them "sevens." Mr. Polhamus expects '34 retail sales to reach 300 units, and wholesale (to six dealers), 100. The company has six outside salesmen on domestic retail.

In sales of Frigidaire commercial equipment and McCray display cases, the distributor's commercial manager expects an excellent year, with general business conditions as they are in Ft. Wayne. Air conditioners will also be handled. Three salesmen work on commercial.

At 1202 Calhoun St. we saw a large, immaculate display room labelled Lehman & Schroeder, and in it was a long row of Universal Cooler refrigerators.

As we peered in, we recalled Mer-

(*Concluded on Page 8, Column 1*)

Waukesha Firm Builds Gasoline Powered Units

Domestic Unit, Milk Cooler & Ice Cube Maker Driven By Gasoline Engine

WAUKESHA, Wis. — A gasoline-powered domestic refrigerator, together with a self-contained milk cooler and a self-contained portable ice cube maker, have been introduced by the Waukesha Motor Co. of this city, manufacturer of heavy-duty gasoline engines for trucks, tractors, and agricultural machinery.

Sales promotion and advertising plans are now under way to build a national distributing organization to retail these new products on a nation-wide scale chiefly in rural markets, according to H. L. Horning, president of the company.

All of the products are refrigerated by the self-contained Waukesha "ice engine," which includes a gasoline engine, the compressor, condenser, and liquid receiver mounted on a single base and occupying little more than 1 cu. ft. of space. In the household refrigerator the unit is mounted in a special sound-silenced cabinet in the base of the cabinet.

The unit will maintain a temperature of 50° F. or lower in the main food storage compartment and 32° F. or lower in the freezing chamber on

(*Concluded on Page 16, Column 2*)

Four Staff Members Named by Copeland

MT. CLEMENS, Mich.—Several appointments to the sales and factory office staffs of Copeland Refrigeration Corp. were announced last week by officials of the company.

W. B. Muse, formerly connected with the Leonard Refrigerator Co. factory staff and Buhl Sons Co., Detroit Leonard distributor, was named regional manager, contacting distributors and dealers in the Eastern part of the country.

R. G. Berg, formerly with the order and sales department of Zerozone Corp., has been named in charge of the order department for Copeland.

P. A. Lovegrin, formerly purchasing agent with Zerozone Corp., has been made assistant to A. G. Watkins, Copeland purchasing agent.

George Lindgren, formerly shop superintendent of Zerozone Corp. and at one time connected with the Commonwealth Edison Co. of Chicago, has joined the engineering department of Copeland Refrigeration Corp.

4 Air-Conditioning Men to Address A.S.H.V.E

DETROIT — Four air-conditioning engineers will address the next meeting of the Michigan chapter of the American Society of Heating & Ventilating Engineers Monday night, April 16, in the Wardell hotel. The speakers are W. W. Higham of Universal Cooler Corp., E. C. Hogan of the American Blower Corp., C. L. Toonder of Kelvinator Corp., and E. E. McEwan of the Detroit Frigidaire branch.

Members of the Detroit A.S.R.E. are being invited to attend the dinner, and other interested engineers are welcome at 8 p. m. when the talks begin. Dinner is at 6:30 p. m.

General Electric Producing 2,000 Flat-Top Units Weekly

By Elston D. Herron

FORT WAYNE, Ind.—Weekly production of approximately 2,000 refrigeration units for General Electric's new flat-top refrigerators is being maintained at the Winter St. plant of the G-E works here, according to Chester Lichtenberg, who is in direct charge of that plant.

In addition, 300 to 400 commercial condensing units of various sizes, approximately 100 water coolers, and 250 to 300 commercial cooling units are being made weekly. This will be the average production each week during the busy season.

These four groups of products comprise all the refrigeration equipment made at the Fort Wayne works, according to Mr. Lichtenberg. All Monitor Top units are being made at the G-E plant in Schenectady, N. Y.

At present, General Electric production is concentrated on 5- and 7-cu. ft. models in the Monitor Top line, and on 5-cu. ft. flat-top models.

Production of comfort-cooling equipment has been transferred this year from Fort Wayne to the G-E works at Bloomfield, N. J. Condensing units for the conditioners are, however, still being made in Fort Wayne.

Approximately 500 G-E air-conditioning units of the floor, wall, and window types were installed throughout the country last year.

Walter S. Goll is general manager of both the Winter St. and Broadway G-E plants in Fort Wayne and of the plant at Decatur; and P. C. Morganthaler is assistant manager.

22 New Distributors Named by Copeland

MT. CLEMENS, Mich.—First official announcement of the distributors who will handle the 1934 Copeland household line in major metropolitan centers was made last week by W. G. von Meyer, sales manager of Copeland Refrigeration Corp.

The list covers appointments in metropolitan and central distributing areas.

Louis Roossin, New York City; Wholesale Distributors of New England, Inc., Boston; A. L. Fink Electric Co., Cincinnati; Refrigeration Distributors of California, Inc., Los Angeles; Baumgardner Distributing Co., Toledo; Emmert Bros., Zanesville, Ohio; Copeland Refrigeration Co., Kansas City, Mo.; Commonwealth Electric Corp., Harrisburg, Pa.; The Westville Electric Co., New Haven, Conn.; G. S. Richardson, Miami, Fla.; Sidney Schrayer Co., Chicago; Binder Electric Supply Co., Trenton, N. J.; Albany Distributing Corp., Albany, N. Y.; Smith & Pearson, Inc., Auburn, N. Y.; Paulson Jewelry Co., Burley, Ida.; The Frankelite Co., Cleveland; The Artophone Corp., St. Louis; Boetticher & Kellogg Co., Evansville, Ind.; Seidel Bros., Milwaukee; Walter Connally Co., Tyler, Tex.; Cook Furniture & Carpet Co., Elko, Nev.; Copeland-Pacific Co., Stockton, Calif.

Grunow Appoints Five New Distributors

CHICAGO—Five new distributors, all of whom will handle both Grunow refrigerators and radios, have recently been named by H. C. Bonfig, vice president and general sales manager of the General Household Utilities Co.

The new distributors are Midwest-Timmerman Co., Dubuque and Davenport, Iowa; W. B. Davis Electric Supply Co., Memphis, Tenn.; Modern Appliance & Supply Co., New Orleans; Peaslee-Gaulbert Corp., Jacksonville, Fla., and Louisville, Ky.; and Bruno-New Jersey, Newark.

Anderegg Elected Vice President of Trane

LA CROSSE, Wis.—R. H. Anderegg has been promoted to vice president in charge of engineering by the Trane Co., manufacturers of cooling units for air-conditioning systems.

Mr. Anderegg has served as chief engineer, and later as central division sales manager.

Zerozone to Be Sold By Receiver on April 17 & 18

CHICAGO—All the assets of Zerozone, Inc., will be sold next Tuesday and Wednesday, April 17 and 18, by Receiver-in-Bankruptcy Edwin D. Buell under the order of the United States District Court for the northern district of Illinois.

The sale will take place at the Zerozone plant here, located at 939-1011 E. 95th St., and will start at 11 a. m. each day.

In addition to the inventory and machinery the receiver will offer his right, title, and interest in the good will of Zerozone, Inc., including patents, trade marks, trade names, lists of customers, lists of sales agents and distributors, and the right to use the name "Successors to Zerozone, Inc."

Directors Elected by Stewart-Warner

CHICAGO—Stockholders of Stewart-Warner Corp. at their annual meeting last week elected directors, but a lack of proxies prevented action on proposed amendments to the charter. The meeting will reconvene April 16.

One of the proposed charter changes would reduce par value of the stock from $10 to $5 a share. Another would change the name of the corporation from Stewart-Warner Corp. to Stewart-Warner Alemite Corp.

The stockholders elected the following directors: Sidney Adler, R. J. Graham, R. J. Dunham, Joseph E. Otis, Ralph M. Shaw, Eugene V. R. Thayer, and James S. Knowlson.

Knowlson is the only new member of the board.

First Quarter Sales of McCray Increase

KENDALLVILLE, Ind.—Sales made during the first three months of this year by the 85 distributors of the McCray Refrigerator Sales Corp. here were 55 per cent greater than in the corresponding period of 1933, according to H. M. Stewart, general manager.

Two hundred men are working at the McCray factory now, and about 30 pieces of commercial equipment—refrigerators, display cases, etc.—are being turned out daily.

Audiola Bought By Fairbanks, Morse Company

3 Household Refrigerators To Be Ready for Sale In May

CHICAGO—Fairbanks, Morse electric refrigerators, radios, and washing machines will soon appear on the market. By acquiring the Audiola Radio Co., a manufacturer of radio sets since 1921, Fairbanks, Morse & Co. has obtained a ready-made distributing organization for these specialty products. This distributing organization will be expanded, however, according to Salesmanager Addison Brown.

Mortimer Frankel, general manager of Audiola, retains his position now that Audiola has become a wholly owned subsidiary corporation of Fairbanks, Morse. Sales offices of the subsidiary will be maintained for the present at the old address, 430 South Green St., Chicago.

In May three models of the Fairbanks, Morse electric refrigerator will

(*Concluded on Page 16, Column 2*)

Engineers Describe Boulder Dam Work

LOS ANGELES—Two speakers who have been intimately connected with Boulder Dam construction work gave some details of that huge engineering project at the March meeting of the local section of the American Society of Refrigerating Engineers.

First speaker was H. N. Royden, chief engineer of the Home Ice Co. of Hollywood, Calif., while the second was A. G. Roach, contracting manager of the Consolidated Steel Corp. of Los Angeles, which obtained most of the contracts for steel work and mechanical equipment used in building the dam.

Mr. Royden was in charge of checking, testing, and starting refrigeration equipment used at the dam. His talk was illustrated with blackboard sketches.

"The project," said Mr. Royden, "is the largest since the building of the Panama Canal. The first step necessary in connection with it was to build Boulder City, a community of 1,000 homes and 5,000 people. This work was completed in less than one year's time, in spite of its inaccessible location.

"In connection with the construction of the city, itself, was the building of a railroad, and also roads from

(*Concluded on Page 11, Column 1*)

Frigidaire Opens Factory Branch in St. Louis

ST. LOUIS—Establishment in St. Louis of a company-owned branch of Frigidaire Corp. was announced April 6 by E. G. Biechler, president.

Frigidaire distribution here was conducted previously by the Del Home Light Co., covering southern Illinois and eastern Missouri.

Branch headquarters are in the building occupied by Del Home at 3414-28 Lindell Blvd. D. K. Banker, resident comptroller of Frigidaire Corp., has come from the factory in Dayton to take temporary charge as acting manager.

Westinghouse Distributors Trade Ideas at Mansfield Conference

(1) N. M. Forsythe, general manager, Danforth Refrigeration Co.; (2) E. H. Culver, commercial sales engineer; (3) J. E. Hugo, central district sales promotion manager; (4) Tom Mason, sales manager of J. W. Green Co.; (5) Manager Ray Cosgrove and Distributor O. V. Danforth of Pittsburgh.

NEWS ABOUT DEALERS

(Concluded from Page 1, Column 1)

chandise Counselor Charles Low's assertion that "the more goods you display, the more you'll sell," and we concluded that if this is true, the store should be doing a crackerjack business, for it seemed that there were Universal Coolers all over the place.

Inside, we met the proprietors of the distributorship, E. D. Lehman and H. J. Schroeder, and J. C. Wood, sales manager.

The company had moved into this location just a week before, we learned, and 1,500 people visited it on the opening day. During the week, three refrigerators were sold at retail.

When we found that the firm has a 14-county territory, and only three dealers, we asked why so few retail outlets.

"We don't want any more," said Mr. Lehman. "Those three dealers cover the far corners of our territory, and our eight salesmen cover the rest."

Last year, the distributor dealt almost entirely in commercial equipment. This is its first real attempt at selling household refrigerators, and its proprietors expect to move a total of 70 this year.

Kendallville, Ind., Dealers

Forty-two commercial installations were made last season in food shops, restaurants, institutions, etc., and Mr. Lehman believes his two commercial salesmen will reach that figure again this year.

"We had a definite reason for opening this 3,000-sq. ft. showroom now," he explained. "Business conditions are all getting better, and rents are getting higher, too. So we took this place while we could still get a good deal on the lease. When things do begin to boom, we'll be all ready —our preparations will all be made."

The managers were still smiling about one household sale they had made earlier in the week: A man named Max Pincus walked in, picked out a model, paid cash for it, and ordered it sent to the freight yards for shipment to Cuba with some used knitting machinery he had just bought.

Then, before leaving, he went to the refrigerator, disarranged the shelves, stuffed the evaporator with old paper, and did a general job of dirtying up the liner and exterior. "Now it will pass as used merchandise. The duty will be less," he explained.

Hoffman-Harber Co. in Ft. Wayne has just taken on the Apex and Westinghouse refrigerator lines. Last year the dealership handled Frigidaire and Graybar.

Sales in 1933 totaled 30 refrigerators, but this year the store expects to sell between 100 and 150. It will triple its newspaper advertising to assist its four outside salesmen, two of whom have just been employed, said Fred F. Harber.

Plans to sell twice as many refrigerators as last year are being made by the Barth Electric Co., Crosley and Grunow dealer.

Last season, when it handled Majestic, too, the dealership sold 110 refrigerators—14 Grunows, the rest almost equally divided between Crosley and Majestic, said Proprietor W. J. Barth.

He already has one outside salesman, and is hiring another. Volume of newpaper advertising will run far over that of last year—already he has used as much lineage as he did during all of 1933.

Said Mr. Barth: "We follow one method of selling very closely. We don't talk gadgets; we talk quality. And we don't talk about low operating costs, because people want electric refrigerators so badly they don't mind if it costs two or three dollars a month for current."

Population of Kendallville is about 5,500. Besides the McCray commercial refrigerator factory, the town's other major plant is that of the Flint & Walling windmill and pump works.

While neither of these factories has been operating on full schedule for the past two or three years, the two have worked together to give some employment to as many of the town's workers as possible.

As a result, most of the 800 or 900 men available for factory work in the town have had at least part-time employment throughout the depression. So while general business there hasn't been particularly good, neither has it stood at a standstill.

Now, with the two factories stepping up their operations to some extent, business is looking up, and refrigerator dealers expect their sales to show the effects of the trend.

This was explained by Carl J. Atz, proprietor of the Atz Furniture Co., Grunow dealer, as follows:

"Everybody here has been waiting for our two factories to get really under way again. There has already been enough improvement to give us hopes of selling twice as many refrigerators as we sold last year.

"People here want electric refrigerators so much that I believe sales will boom when the town is going 100 per cent again. I think this store's next real money will come from electric refrigeration."

During the first five months of 1933, the Patterson Bros. appliance store handled U. S. Hermetic refrigerators, and sold six. On June 1, the firm took on Kelvinator, and by the end of the year, sold 19 of that make.

This season, the appliance business has improved, said K. G. Patterson. The week before we called, the store sold eight Maytag washers, and one deluxe 7-cu. ft. Kelvinator. Mr. Patterson expects to sell at least as many refrigerators in '34 as were sold all last year.

The brothers are going to handle commercial equipment, too, this year, and believe they will make several installations in the town.

C. W. Shew Electrical Shop in Kendallville handled Dayton refrigerators last season. Only two were sold. Now Mr. Shew is selling Leonard, and expects to sell about 10 this year.

Despite the cold spring, a good many more people have come in to look at refrigerators this season than during the early part of last year, the proprietor told us.

"I'm going to do considerably more advertising than I did in 1933," he said, and I'm going to hire an outside salesman, if I can find a good one. I've never had an outside man before."

Toledo, Ohio

In Toledo, where business conditions are very much on the upgrade, we visited six refrigeration outlets and found men in each of them expecting the biggest year in their history.

The H. G. Bogart Co., General Electric distributor, did a wholesale business in January which exceeded that of the same month in 1933 by 367 per cent. February was 350 per cent better than the corresponding month last year, and March was 247 per cent greater.

Officials of the company believe that this year's total sales will at least double last season's volume, said F. J. Jeffries, retail sales manager, and C. J. Gelsleichter, secretary-treasurer.

January retail sales in Toledo were about the same as last year, but February showed a 167 per cent increase over that month in '33, and March a 225 per cent gain. Already, more electric ranges and dishwashers have been sold than were moved during all of last year.

The distributor has 75 dealers in four Michigan counties, 27 in its Ohio territory, and 23 in Indiana. Three sales coaches will cover this area this year; last year there was but one. Newspaper advertising will be at least doubled by all the company's dealers.

Bogart retailers in the area around South Bend, Ind., have done the largest volume of business so far this season, principally because of accelerated industrial activity in that section, Mr. Gelsleichter reported.

C. M. Sylvanus, formerly a representative of the Studebaker motor car company, now a G-E dealer in South Bend, has just opened a new three-story building there for sale of G-E appliances. The first floor is a salesroom and the second an auditorium equipped with an all-electric kitchen.

All dealers are reporting that the number of shoppers visiting their stores is much larger than at this time last season, the Bogart men said, and added that the 12 dealers they have handling commercial equipment say prospects in that field are *much* brighter this year than last.

Since Jan. 1, the distributor's commercial salesmen in Toledo have made several sales. A large refrigerator was installed in the barroom of the Hotel Secor, and equipment for refrigerating an 18x18-ft. walk-in cooler was sold to the Fort Meigs Distributing Co., beer wholesaler in Toledo.

In the Rogers Bros. meat market, a D-100 display case was installed, together with a CM-6W compressor which also cools a walk-in refrigerator and a cheese box. An 18-cu. ft. Monitor Top refrigerator, and a CM-4A compressor for a beer precooler and coil box were purchased by Stone's Grill.

Another installation being made is a General Electric-Russ beer cooler for the Buckeye Brewing Co., in its recreation room.

E. A. Crapper, Bogart's commercial sales manager, has been conducting a series of sales schools among dealers handling commercial equipment. He reported at headquarters that E. A. Barnes Electrical Appliances, Inc., dealer in Fort Wayne, has been making as many commercial sales as the distributor's own sales force in Toledo.

Mr. Bogart is president of the newly organized Electric Club of Toledo, formed to promote ethical merchandising practices among appliance outlets. Membership is open to dealers, distributors, and others interested in appliance selling, Mr. Jeffries said.

On April 5, 6, and 7 the *Toledo Blade* sponsored an electric refrigerator show in the John Moffatt building, with all the town's refrigeration distributors and dealers invited to participate. The paper plans to make the show an annual affair, according to the G-E men.

In September of 1932, the Electric Range & Equipment Co. opened in Toledo as a retailer of Leonard refrigerators and other major appliances. Three months later, it became a distributor for 16 northwestern Ohio counties, and in 1933 sold a total of 600 electric refrigerators (wholesale and retail).

First quarter of this year, retail sales by the firm's 18 outside salesmen showed a 25 per cent increase over business for the same period last year, and wholesale business a 50 per cent jump. The distributor, with 21 dealers, expects its total business for the year to exceed last year's by 40 per cent.

As to why sales have been good this year, E. A. Tullis, vice president in charge of sales, said, "Fear of wage and salary *cuts* is past in this country. People are now living in hopes of *increases*. That helps business.

"Competition, here in Toledo, anyhow, will be keener than ever this year among merchandisers of nationally known makes of refrigerators, but the fly-by-night competition has dropped almost entirely out of the picture."

The company's retail selling force has made several two-refrigerator sales already this season—customers buying refrigerators for their homes and summer cottages at the same time.

On April 4, the distributor opened a retail branch at 419 St. Claire St. in Toledo, said Mr. Tullis. Only refrigeration will be displayed and sold there, and a special staff of salesmen will contact the prospects who visit the outlet.

Most any refrigeration man in Toledo will tell you that the Toledo Edison Co., dealer for Frigidaire and Kelvinator, sells plenty of refrigerators during the course of a year. The utility has a beautiful salesroom which shows appliances off to best advantage, bill payers make store traffic, and there are 10 salaried salesmen to talk to the prospects.

Said J. E. Fanning, appliance sales manager:

"Toledo dealers installed 3,500 refrigerators in this city last year. They'll sell more than that this season. During the first three months, our sales ran 50 per cent ahead of those in the first quarter of 1933, and we expect the year's total to exceed last year's by 33 to 50 per cent.

"We have had about the same amount of store traffic as last year, but there has been much more genuine interest shown in refrigeration this spring—people are easier to talk to.

"Another thing we have found is that folks *know* refrigeration this year. They've been out shopping, and they know what they're talking about. The depression taught them the value of a dollar, and they aren't going to spend their money until they know what they're getting and see what everyone has to offer.

"I've told my salesmen that they must have more patience in their selling this year than they have had before. With people knowing a lot about refrigeration in general, it takes longer to sell them on one particular make."

The Toledo Radio Co. is distributor of Sparton refrigeration in the Toledo area. It has nine dealers in the city, and 35 in the surrounding territory. We talked to Preston Brown, manager of refrigeration sales in Toledo.

During the first quarter of this year, the company's sales (wholesale only) were three times as great as those during the corresponding period in 1933, and Mr. Brown expects business for the year to total 500 units—a 50 per cent increase over last season.

Dealers have told Mr. Brown that the public is showing considerably more interest in refrigeration than ever before, that prospects seem most interested in fairly large models. Best sellers so far this year have been 6- and 7-cu. ft. models. Every one of the company's retailers will do more advertising this year than last.

Serving seven dealers and doing retail work in Toledo is the Heat & Power Engineering Co., Ice-O-Matic distributor headed by W. Wemmer. The concern also handles fuel oil and Oil-O-Matic burners.

Refrigeration sales during the first three months of this year were few, said Mr. Wemmer, but he expects to sell (wholesale and retail) 200 to 250 units by the end of the season, approximately 33 per cent more than were sold last year.

The distributor's dealers have reported that conditions in their communities are conducive to a good volume of sales this season, provided too many men are not thrown completely out of work when the CWA expires. All the retailers have boosted their advertising schedules for this season.

Oil burner business was quite good during the first quarter, said Mr. Wemmer, particularly so in March. He expects '34 sales on burners to run far ahead of the '33 total.

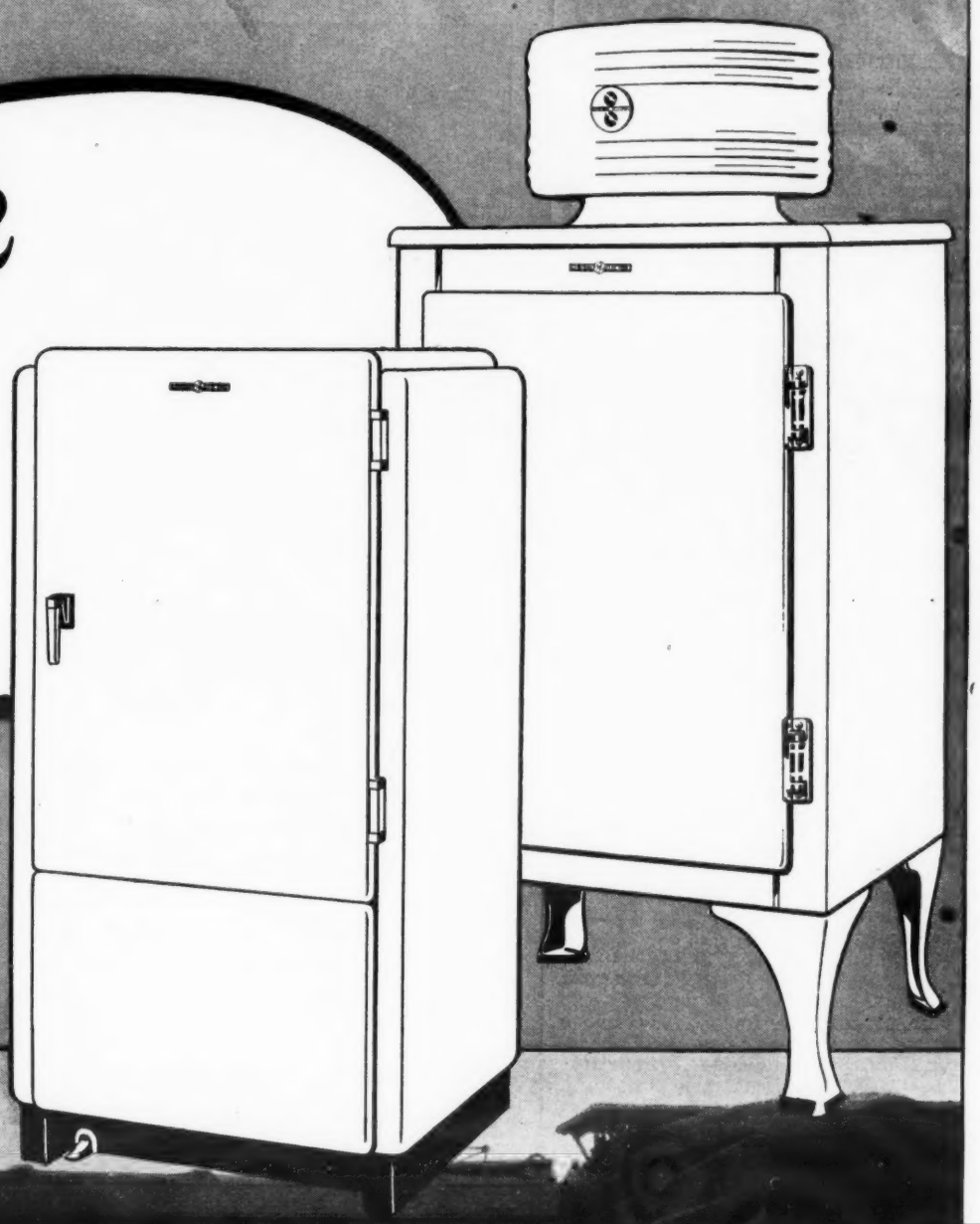
We called at the J. W. Greene Co., Westinghouse distributor, but found that Tom Mason, sales manager, and all other refrigeration officials of the company were at a factory meeting in Mansfield, Ohio.

E. G. Heck, retail salesman, told us that the company has 14 men working outside on retail refrigeration sales in Toledo, that to date, the men are well ahead of their quotas. Officials of the distributorship expect this year's sales to exceed last year's by a good margin, he said.

R. I. Blanchard is the company's new washer sales manager. Starting just two weeks before we called, Mr. Blanchard put six outside salesmen on washer sales, and in the two weeks sold 35 machines.

"We sold five the first day!"

E. M. ROBERTS, JR., *President*
E. M. Roberts Electric Company
Henderson, Texas



EVERY electric refrigerator dealer should read the following letter written by Mr. Roberts to the General Electric Company—

"Having been in the electrical specialty selling business for the past 17 years, and remembering the years that have passed and the cost of servicing electric refrigerators, the writer saw more profits and easier sales from lining up with the General Electric refrigerator.

"Immediately upon signing your franchise we placed an opening order for one car-load of G-E refrigerators. This car was unloaded by us today, and in order that you might appreciate the public acceptance of your product in this territory, we delivered and installed five new refrigerators *today*.

"I have never seen a product with such great public acceptance as the General Electric has. The wonderful cooperation which your organization has given me in getting started is indeed appreciated. Your Mr. Griswold has made a personal visit with us showing us how to sell your merchandise and has done us a great deal of good. We likewise appreciate the cooperation of your local territory man who is eager and willing to help us in every respect."

• •

If you are not already a General Electric refrigerator retailer, write or wire for details of the General Electric Franchise. General Electric Company, Electric Refrigeration Department, Section DF42, Nela Park, Cleveland, Ohio.

5 YEARS PROTECTION *now!*

General Electric now offers 5 Years' Protection *on its famous sealed-in-steel Monitor Top mechanism for only $1 a year! The standard 1-year warranty, plus four years' additional protection against failure of the sealed-in-steel mechanism for only $5—$1 a year!*

GENERAL ELECTRIC

ALL-STEEL REFRIGERATORS

Kelvinator Salesmen Visitors at Factory

DETROIT—Forty Kelvinator retail salesmen, winners in the "Deluxe" sales contest, journeyed here last Thursday and Friday to take an inspection tour through the factory, visit Henry Ford's famed Greenfield Village, and to be entertained by Corine Muer's girls at a banquet held Thursday night.

Those making the trip included the following:

A. G. Kacher, Milleman Co., Ambridge, Pa.; H. P. Clark, Clark & Humphrey, Bradford, Pa.; Charles Meyers, H. H. Meyers, Howard Orts, R. Ottenger, and Fred Schwegler, Schwegler Bros., Buffalo.

A. W. Evans, P. J. Gimino, P. S. Holland, and W. J. Kirsch, Commonwealth Edison Co., Chicago; G. B. Sprowls, Jr., Geo. B. Sprowls & Sons, Claysville, Pa.; R. G. Doty, Rosenbaum's Department Store, Cumberland, Md.; J. E. Knott, W. L. Lewin, and A. H. Warne, Kelvinator Bohman Co., Inc., Hagerstown, Md.

K. S. Isley, Carolina Power & Light Co., Henderson, N. C.; F. H. Fulton, P. C. Gregory, and R. B. Klein, Pearson Piano Co., Indianapolis; Richard Winter, Winter Furniture Co., Irwin, Pa.; Raymond Korff and Samuel Muier, Korff Electric Co., Lockport, N. Y.; H. D. Keller, Northwestern Public Service Co., Mandan, N. D.

James McGee, James McGee Tea Co., Mt. Pleasant, Pa.; A. M. Lindsey, Newport News, Va.; Sam Baio, J. M. Considine, F. Fischer, Wm. Raison, Schwegler Bros., Niagara Falls, N. Y.; H. B. Stevich, Carolina Power & Light Co., Raleigh, N. C.

C. E. Anderson and T. W. Sprowls, Geo. B. Sprowles & Sons, Washington, Pa.; A. W. MacNichols and Edward Blum, Earle Rogers Co., Wheeling, W. Va.; P. D. Miller and B. W. Whitasse, Miller & Anderson, Winchester, Va.; C. Z. Stough, Careva Co., York, Pa.; C. Laufersweiler, Kelvinator Sales Corp., Buffalo.

Melco Accessory Catalog Being Distributed

NEW YORK CITY—The 1934 Melco electric refrigeration accessory catalog is now ready for distribution, it has been announced by officials of Melchior, Armstrong, Dessau Co., which publishes this yearly catalog.

Form of the new publication has been changed from the old type assembled catalog to a printed one.

The Life of the Party

Cash Laufersweiler (left), Kelvinator Sales Corp., Buffalo; and Herman H. Meyers, Schwegler Bros., Buffalo., who joined 40 other star Kelvinator salesmen in a two-day visit to Detroit as a reward for selling more than 100 cu. ft. of deluxe model refrigerators.

Department Store Sales Show Increase in March

NEW YORK CITY—Total sales of department stores in the New York metropolitan area during the first half of March were 36 per cent larger than in the corresponding period last year, according to a monthly review of business conditions released by the Federal Reserve Bank of New York.

"This substantial advance," the review says, "is accounted for in part by the banking holiday in March, 1933, but nevertheless indicates a more than seasonal increase in retail trade during the last month."

Carter to Handle Servel Machines in Vermont

EVANSVILLE, Ind.—As distributor for its full line of commercial refrigerating equipment, milk coolers, and air-conditioning equipment in Vermont territory, Servel Sales, Inc., has announced the appointment of S. R. Carter, 6 Chase Lane, Burlington, Vt.

Mr. Carter has been serving the Burlington area and adjacent counties as distributor for oil burners, farm and dairy equipment, and general farm appliances. The new line will be retailed through the Carter company as well as sold through dealers.

Pendergraph Leads G-E Distributors in South

CLEVELAND—First results in the "All Star Discovery Drive," current sales competition sponsored by General Electric Co.'s specialty appliance sales department here, were announced March 27 at the end of the drive's first week in southern territories. The contest opened in the North April 2.

H. A. Pendergraph's Tennessee Appliances, Inc., in Nashville gained more credits during the first week than any other southern distributor. In group 2, star distributor was R. S. Montgomery, Inc., of Richmond, Va., nearest competitor being C. L. McCrea of National Electrical Supply Co., Washington, D. C.

Albert Ahrens Co. of Oklahoma City took the lead in group 3, and Kelly Courtright of the Valley Electric Supply Co. in Fresno, Calif., was leader of the Pacific Coast group at the close of the first week.

E. E. Colladay of the National Electric Supply Co. was the only apartment house sales manager who won a star ranking during the first week. Four commercial sales managers earned stars: L. C. Hindley, Matthews Electrical Supply Co.; R. E. Garrett, R. S. Montgomery, Inc.; Roy Norwood, Albert Ahrens, Inc.; and H. C. Falkell, Electric Appliances, Inc.

Three wholesale sales managers won laurels. They were R. S. Ashley, National Electrical Supply Co.; Albert Ahrens; and R. W. Downing of Valley Electrical Supply Co. Star retail sales managers: J. M. Evans, Matthews Electrical Supply Co.; Harry M. Owen, R. S. Montgomery, Inc.; E. G. Heins, Albert Ahrens, Inc.; and L. H. Bennett, Electrical Appliances, Inc.

Utility merchandise managers in the South who won star rating for the first week were L. Jennings, Hines Co.; H. G. Isley, L. W. Driscoll, Inc.; G. B. Richardson, Electric Household Appliances; and P. C. Tucker, O'Bannon Bros.

Southern dealers who broke quotas for their distributors were: Hill & Phillips, Richardson-Willard, C. Schneider Sons, Schindel-Rohrer, Peterson & Austin, Welch Hardware, Ralph Lewis, Jones Hardware, and E. G. Shapard.

Distributors' retail salesmen who stood at the top of the list were: U. B. Ausbaun, Mathews Electrical Supply Co.; B. N. Wright, George Patterson, Inc.; C. L. Harrison, R. S. Montgomery, Inc.; A. P. Shanklin, National Electrical Supply Co.; L. K. Blucher, Hines Co.; Ralph Robey, Albert Ahrens, Inc.; W. J. DuBois, Electrical Household Appliances; J. B. Davis, Valley Electric Supply Co.; and Ted Hunt, George Belsey Co., Ltd.

Winning dealer salesmen were: A. L. Shelton, I. C. Warner, E. H. Bowman, G. H. Peterson, Ralph Helm, Herbert Lewis, Donald Jones, and O. R. Fredericks. Utility salesmen who earned first-week stars were Joe Barringer, L. C. Dobbins, H. M. Taylor, C. A. Van Dine, and G. H. Ogden.

Six commercial salesmen went over quota. They were F. C. Brigham, Matthews Electrical Supply Co.; A. D. Rogers, W. D. Alexander Co.; J. M. Richardson, R. S. Montgomery, Inc.; Cy Perkins, National Electrical Supply Co.; M. T. Patterson, Albert Ahrens, Inc.; and E. R. Murphy, Valley Electric Supply Co.

Refrigerators Shown In Detroit Exposition

DETROIT—Household refrigeration and air conditioning for homes are playing leading roles at the 16th annual Builders' and Realtors' Exposition at Convention Hall here this week. Although the number of exhibitors is considerably smaller than in previous years, refrigeration exhibits are fairly numerous and imposing.

Universal Cooler, for instance, is displaying four household refrigerators and a small bottle beer cooler of the buffet type. Westinghouse shows six household refrigerators, in addition to three washing machines, a couple of electric ranges, food mixers, and other Westinghouse appliances.

Norge is exhibiting a line of five 1934 models, while across the aisle is Detroit City Gas Co.'s spacious exhibit with Electrolux refrigerators, gas ranges, hot water heaters, etc.

Grunow's booth includes five household refrigerators, and one operating inside an insulated glass-doored hot room in which a temperature of 120° F. is maintained to demonstrate the refrigerator's ability to hold a 45° F. cabinet temperature. Running time of the unit was advertised as 70%. Grunow also shows a demonstrator unit operating in room air.

Six Frigidaire household models appear in the exhibit of the Gardner-White Co., which also shows Maytag washing machines and ironers, Apex vacuum cleaners, G-E radios, and small G-E appliances.

Bullock-Green Hardware Co. has on exhibit five Leonard electric refrigerators, and a number of Apex washing machines.

Air-conditioning equipment at the show includes Gar Wood oil-burning furnace and winter air conditioners, Electrovent window ventilators, York gun-type oil burners, Perfection Stove's Superfex oil-burning furnace and winter air conditioners, and General Electric's room cooler, oil-burning furnace, winter air-conditioning systems with summer cooling optional, and G-E gas-burning furnace.

Rempe Installs Fin Coil Fabricating Machine

CHICAGO—Rempe Co., cooling unit manufacturer of this city, is installing a new fin coil fabricating machine, according to Gerald S. Bataille, director of sales for the company.

Home Service Dept. Should Show Profit

CLEVELAND—A retail home service department may be not only self-sustaining—it may realize a substantial profit. That is the conclusion of the home service staff of the specialty appliance sales department of General Electric Co., in a study of home service costs included in a plan for the most efficient operation of a distributor or dealer home service department.

The new plan, complete in its treatment of the problems of home service activity, is composed of two parts, a distributor home service plan and a dealer home service plan. Details of the plan have been published in booklet form.

The distributor plan outlines a suggested budget to cover home service activities conducted by the distributor and shows that the profit derived from the sales made by the home service department of three major appliances per month and of accessories more than pays for the maintenance of a home service department.

Functions of Department

The plan points out the ways in which the department may function most effectively, among them being:

1. The establishment of a users' day at certain intervals.
2. Cooperation with women's clubs (clubs are invited to use the distributor's institute room for meetings or card parties).
3. Department store demonstrations.
4. Cooperation with newspaper cooking schools.
5. Cooperation with newspaper household editors.
6. Contacting new users on all appliances.
7. Contacting central stations.
8. Conducting courses for salesmen, product men, and other employes.

The dealer plan recommends that the home service director from the distributor organization be scheduled to visit certain dealers' territories at specified times. Some of the activities involved during her stay in the dealer territory include the conducting of cooking schools, showroom presentations, arranged tea party demonstrations in users' homes, establishment of "Users' Day" in the dealer's showroom one day a month.

One chapter in the plan gives a very complete outline of the type of schools to be held, the equipment needed, advertising, literature, and publicity to announce the school and the dealer's and distributor's parts in organizing the cooking school program.

'User Plan' Outlined

The "User Plan" is outlined, and methods of notifying the user and topics for the lecture to be given on the refrigerator, range, and dishwasher are suggested.

It has been found that a contact with club women is a successful means of telling the electric kitchen story to a large audience. Various methods of building up a program to carry on this activity are covered.

Educational classes for salesmen, demonstrations for high school groups, classes or demonstrations for home economics teachers, showroom demonstrations, tea party demonstrations, and radio bridge parties are taken up in this outline of dealer activities and the method of handling each type of demonstration is described fully.

Further to assist the home service staffs of distributor organizations in presenting the electric kitchen story, General Electric has prepared a course of four lessons on the use of electric kitchen equipment.

Some of the topics covered in the refrigerator story are food preservation, food economy, advance preparation of complete meals, breads, pastries, cookies and cakes, salads and desserts, and utilization of left-overs.

Surface, thrift cooker, and oven cookery are taken up and foods to be cooked and methods of preparation are recommended. The course is aimed to show the principles of electric cookery, how to operate the electric range and to demonstrate the advantages of electric over flame type cookery.

Atlanta Paper Publishes Refrigeration Section

ATLANTA—The Sunday, March 25, issue of the Atlanta *Georgian-Sunday American* included a 12-page special section on electric refrigeration.

Besides carrying announcement advertisements of the new 1934 lines of household refrigerators, all editorial matter in the section was devoted exclusively to telling the story of electric refrigeration.

Keyes to Manage Sales Of Burke Divisions

BOSTON—Richard V. Keyes has been named sales manager of the radio and washing machine divisions of the J. H. Burke Co., Boston distributor for Leonard refrigerators and other household appliances.




(1) Jim Irwin, Frigidaire publicity man, rates a picture because of his trick attached-to-desk phone. (2) A. D. "Mickey" Farrell, in charge of window displays, sits beside a fin coil assembly to read the News. (3) Lovely Thelma Welbaum of Frigidaire's publicity department. (4) Lee Clarke, Frigidaire sales promotion manager. (5) Clarke kibitzes while Irwin two-fingers a story.

By G. F. T.

"If I Had a Million"

POWEL CROSLEY, Jr., must have a helluva good time out of life. Somehow we can't think of many men whose multiple interests are so varied, so exciting, and yet so thoroughly interrelated and integrated.

Consider: He is president of the Crosley Radio Corp., which last year —according to our own estimate— ranked second in the world of radio manufacturers, and which today is also well on the road to be one of the first four or five manufacturers of electric refrigerators. Because of the peculiar nature of the Crosley distribution set-up, Mr. Crosley is also the head of the largest dealer body in both the radio and refrigeration industries.

He owns and operates WLW, "the nation's station," one of the pioneer broadcasting stations of the country, and one of the best known and most popular of the independents. He operates station WSAI. He is also operating experimental station W8XAL, the 500,000-watt transmitting station which is by far the most powerful in the world.

And latest of all, he has become president of the Cincinnati Reds baseball team, which is one of the eight clubs in the National League, the senior major circuit.

If you had a million dollars, can you think of anything that would be more fun than being (1) one of the nation's leading manufacturers; (2) owner and operator of the biggest radio broadcasting station in the world; (3) president of a major league baseball club; (4) leading citizen of Cincinnati?

There's one thing we'd add: a daily newspaper.

A steam yacht and a villa on the Riviera simply wouldn't be in the same class with that line-up.

* * *

22,000 Scouts

One thing that POWEL CROSLEY, Jr., does with any enterprise he takes under his wing is make it pay. It may be a flock of fun and all that, but Mr. Crosley insists on using only black ink on the ledger.

Moreover, he correlates the activities of his various undertakings. Now there's the matter of getting material for the Reds, f'rinstance. Cincinnati's baseball team, you know, hasn't done so well in recent years. And it's up to Mr. Crosley to build it up if he wants a winner to represent his home town.

Well, sir, do you know what he has done? He has appointed every Crosley dealer a scout! And any dealer who uncovers a good piece of ivory (recruit baseball player) has a chance at a $1,000 reward! There are Crosley dealers in every crossroads hamlet, and it will be hard for promising sandlotters to escape their calculating eyes.

What impresses us even more is how much influence that ball club will have on the dealers and their loyalty to Crosley. Anybody who hasn't lived in a small town can't appreciate how much importance these folk attach to the national pastime. In the summer it becomes the chief topic of conversation, and in the winter it furnishes the material for many a good discussion around the tobacco-stained old stove.

Every Crosley dealer now becomes, figuratively speaking, one of the proprietors of the Cincinnati Reds. And how that will make these dealers feel! Unless we have our fellow small-towners all wrong, every Crosley dealer will take considerably greater pride in selling Crosley radios and refrigerators, in displaying the products, and in promoting the name, than he ever did before.

Dealers in metropolitan sections can't be depended upon to display much loyalty to the Reds, because they'll have their own big league clubs to follow. But those in lesser cities and towns—oh, boy!

Swell idea, isn't it? Now if PHIL WRIGLEY of the Chicago Cubs could only line up all the drug stores and cigar stands which sell his chewing gum, and Col. JAKE RUPERT of the New York Yankees could enlist all the beer gardens and restaurants which sell his brew, *there* would be a league!

* * *

Powel Crosley, Athlete

Being president of a major league baseball club is not such a radical step for a manufacturing executive as some might think. Back in 1906 and 1907 he was first-string pitcher on the University of Cincinnati baseball teams. In the same years he was a tackle on the university's football team.

Six feet, three inches tall, ruggedly built, he is still a sportsman. He is an inveterate flyer, plays polo, fishes and hunts, putters around at golf. Bridge he refuses to play; but anything outdoors, ah!

As operator of a pioneer radio broadcasting station, he himself broadcast the first baseball game ever heard over the air from Cincinnati—more than a decade ago. He is 47 years old.

* * *

Station WLW

And that gives you another tie-up: his baseball team and his broadcasting station. He can broadcast his own baseball games!

Crosley dealers have long known the value of WLW as a sales promotion force. Every 15 minutes listeners who dial in this station hear the Crosley name. Many times a day they hear short plugs for Crosley radios and refrigerators.

That's advertising of which all midwestern dealers, especially, are acutely conscious.

When the new 500,000-watt transmitter gets going on a regular basis, station WLW will be equivalent to a national network of stations, a coast-to-coast chain of daily broadcasting for Crosley!

The Yellow Peril

We have, by the way, a testimonial for the 500,000-watt transmitter, now broadcasting experimentally over Crosley station W8XAL.

As many readers of this column know, we chase after news in a streamlined racing car (dubbed "The Yellow Peril") capable of great speed. Well, station W8XAL is the only voice-of-the-air which can be heard clearly over our auto radio (we don't have noise suppressors on) when it is traveling more than 85 miles per hour.

Just as a test, we tuned in on W8XAL, and on a short, straight stretch devoid of traffic ran the speedster up to 104. That didn't disturb reception one whit; and we heard a pipe organ playing Rubenstein's "Melody in F" (friend JOE HALL of Chicago insists that what we probably heard was a choir of angels hymning "Nearer My God to Thee").

This story was related to Mr. Richardson, and he asked us to print it, so here it is, s'help me.

* * *

Fromaniacs

Speaking of radio, there is a group of Frigidaire junior executives over at Dayton who call themselves "Fromaniacs." You will remember that JANE FROMAN was the star of the Frigidaire radio program last year. She was a dandy, and went over big.

Now she's in the "Ziegfeld Follies of 1934," and is acclaimed as a first-magnitude star. Frigidaire executives get a welcome backstage from the gracious Jane and her husband, DON ROSS, who is also singing in the "Follies."

And as for singing, you should hear Frigidaire men "sing the praises" of this lovely girl who has risen to eminence so quickly.

(Parenthetically, we'd like to call your attention to deep-voiced FRANCES LANGFORD, who has been starring on the Sparton radio-refrigerator air program over a NBC network. She's headed, we think, up the same dizzy path).

Have you noticed all the kind words said about Frigidaire's *Seth Parker* radio program by the dealers ELSTON HERRON has been interviewing for the News? *Radio Guide's* recent poll shows this program high up in the list of popularity.

Incidentally, that poll reveals a perhaps amusing sidelight on radio listeners' tastes. In the tabulation of orchestras in order of popularity, the list starts off with WAYNE KING, GUY LOMBARDO, BEN BERNIE, and RUDY VALLEE, and continues on down through 64 names. Sixty-second on the list, just above CHARLIE AGNEW and JOE SANDERS, is the Boston Symphony orchestra!

* * *

Leaf from the Diary of an Editor

Lay abed late, and down to the office too tardy to catch a telephone call from A. M. TAYLOR, merchandising manager of the Potter Refrigerator Co., and former sales promotion head of Kelvinator and Leonard . . . Bert was on a hurried trip through the city, and just wanted to say "hello," according to comely Secretary CHRISTINE OTIS . . .

And that reminds me . . . In two weeks red-headed Chris, a favorite of all visitors to the office of the Business News Publishing Co., will be leaving us to become the bride of handsome "SCOTTY" HOCK, scion of one of the oldest families in Detroit . . . Do you join us in wishing her happiness? . . .

Soliloquy behind the morning cigar: We just can't seem to keep the swell girls we get in this department . . . There was GERTRUDE STANTON, cleverest writer of us all, who last summer became Mrs. HALBERT OTIS CREWS, JR., of Chicago . . . And pretty MARGARET THOMPSON, who is now doing special work for HENRY FORD . . . Also smart JEAN KERR, the Vassar girl, who is now in the feature department of the *Detroit News* . . . We can pick 'em, but we can't hang onto 'em . . . Maybe F.M.C. should get a tall, dark, and handsome editor, one with sex appeal, God forbid . . .

Looking through notes brought back from the Cincinnati trip, found one saying that Evangelist AIMEE SEMPLE McPHERSON was a recent visitor to the Crosley plant . . . Never forget the time when we went to her dressing room to interview the Showwoman Who Learned How to Make a Profit from Exhorting Sinners (the gate that night was more than $4,000, and she comforted at least 1,000 contrite men on the stage) . . . She told a dandy story about how her electric kitchen enabled her to run a household in between shows at Angelus Temple . . . The writer, green and brash, had just come up from Illinois that summer to become one of three assistant editors of the News . . . the then editor didn't think much of the story, so it didn't appear . . .

Celebrities do help dramatize a story, though, we still insist . . . Note General Electric's effective use of Novelist CHARLES FRANCIS COE . . . and WALTER DAILY'S capitalization upon the appeal of BETTE DAVIS, LEO CARRILLO, DICK POWELL, PRESTON FOSTER, and other Warner Bros. stars . . . He has turned his friendship with Col. ROSCOE TURNER, holder of innumerable air speed records to good account, too . . . Col. Roscoe, by the way, is now on the staff of LOU MAXON, General Electric's appliance advertising agency . . .

A long distance call asking for more details about the sale of Grigsby-Grunow next Monday . . . Seems a darned shame that Majestic had to go on the block just as the biggest refrigeration season of all time is bursting into view . . . The new Majestic models which Manager JOHN DITZELL showed me a couple of months ago—they never reached production—were knockouts, and of highly original style . . . Heck! Almost anybody could sell thousands of refrigerators this year, it seems . . . And now the creditors will have to accept song money . . .

Speaking of Grigsby-Grunow reminds us that Miss PEGGY GRIGSBY, pretty daughter of former Board Chairman B. J. GRIGSBY, is on the Northwestern University rifle team, and a few days ago shot 99 bull's-eyes out of 100 in a special match! . . . Publisher Cockrell is a good shot, too . . . Comes by it naturally . . . His father was a champion trapshooter (note to linotype operator: be sure to spell "trapshooter" with a "t" and not a "c") . . .

Mrs. HENRY BONFIG, wife of Grunow's vice president in charge of sales, is a crack shot, also, when it comes to flashing repartee across a table . . . Had dinner with the Bonfigs and Mr. and Mrs. J. H. RASMUSSEN of the same company (the Rasmussens are as handsome a young couple as ever you'll see) at Chicago's smart Chez Paree Easter night . . . Mrs. Bonfig had us in stitches with her wit . . . Her only counterpart is in PHILIP BARRY'S plays (two of them have been made into movies, both starring ANN HARDING—"Holiday" and "The Animal Kingdom"—remember?) . . . But we had doubted that people really talked like the characters of PHILIP BARRY or OSCAR WILDE until we heard the Bonfigs that night . . . By the way: remind us to tell you our OSCAR WILDE story next time you see us . . .

President THOMAS EVANS of Merchant & Evans came in for a long chat about this-a and that-a . . . He is vehement in his denunciation of the Tennessee Valley experiment, and predicts dire consequences . . . Given proper backing, he might make a court fight against it, as he did some years ago against public utility merchandising . . .

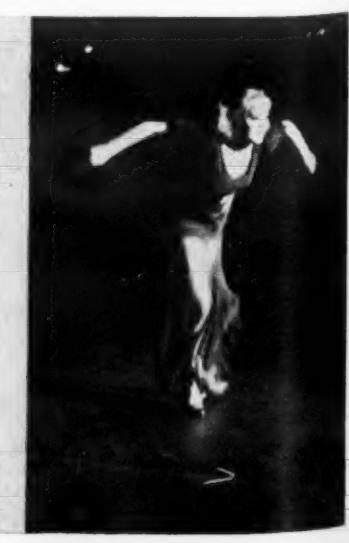
Down to the Book-Cadillac for Kelvinator's banquet (note to the Book's advertising manager, JACK STIMBER: the dinner was okay, this time!) to 60 Deluxe Winner salesmen . . . CORINE MUER, entertainer to the industry, outdid herself in putting on a variety show . . . Every act was a show-stopper . . . Watch this page next issue for pictures . . .

Left at 11 o'clock to attend the opening of the New Oriole Terrace, and half of Detroit's advertising fraternity there, including many refrigeration representatives . . . The show couldn't compare to Corine's . . .

Back to the office to study mail neglected during the day . . . Interesting letters from Vice President JOHNNY KNAPP of Norge, Treasurer BILL MYERS of Mayflower, Manager G. W. WESTON of the Kansas City Electrical Association (with dope on competitive campaign of ice interests down there), BOB RICHARDS of Westinghouse, JOHN DITZELL of Majestic, Prof. M. P. PHILLIPS of Pennsylvania, CHARLES D'ELIA, oldtime Bridgeport distributor, SAM NIDES, sales promotion manager for DICK COOPER in Chicago, Distributor R. S. MONTGOMERY of Richmond, E. A. WILDERMUTH, Kelvinator domestic distributor in New York, RALPH WINSLOW of Armstrong Cork, W. F. FRIEND of Electric Bond & Share, WALTER DAILY and "HEINIE" GROW (who ordered extra copies of the issue containing the descriptive article on Bermuda) of General Electric, and others . . .

It's an interesting life!



Frigidaire is getting a big break in New York shows this year. (1) Jane Froman, Frigidaire radio star, singing in the "Follies." (2) Walter Huston in "Dodsworth"—in the wings is a Frigidaire for making ice cubes used in the play. (3) A scene from "No More Ladies," starring Melvyn Douglas, which also has a Frigidaire. (4) Ina Ray of the "Follies" turns on the heat.

She Bought a Refrigerator in Spite of Salesmen

Housewife Tells How Competitive Arguments Almost Destroyed Her Desire to Buy an Electric Refrigerator

1531 N. El Paso St.
Colorado Springs, Colo.
March 26, 1934.

Editor:

An electric refrigerator stands in my kitchen. I am proud of it. I like to show it off to my friends. I revel in its convenience and rejoice in the way it lightens my work. My family delights in the frozen desserts. Instead of going to the grocery store daily I go once a week on the day when special prices mean a real saving. Thus I save time, money, and effort.

Yes, I am glad that electric refrigerator is in my kitchen. I wouldn't give it up for worlds. And it is there in spite of salesmen and dealers. Quite unintentionally they nearly convinced me I should be wiser to keep my old ice box and avoid the expense of this contraption, a costly burden because of its mechanical faults.

Such was my experience with the salesmanship used in selling me an electric refrigerator. Perhaps it is not a typical one. Let us hope so. Otherwise I fear a worthwhile industry is placing a serious handicap upon itself.

Narrows Choice to Five

Before I ever entered a dealer's showroom, I had in my mind narrowed my choice down to five makes, manufactured by companies enjoying a nation-wide and well-deserved reputation for the quality of their products. Advertisements and the recommendations of my friends influenced my decision to select one of the five.

Yet what did I discover when I visited the dealers, all of whom hold a high standing in the community, a city of 50,000? Three of them I knew personally through previous satisfactory dealings. Certainly, I had no lack of superlatives about each one's own product, but that was to be expected. I encountered a mass of technical data quite confusing to a housewife.

What I did find in most irritating quantities was a habit of knocking the other fellow's product, even knocking the reputation and character of competitors. It seemed an insult to my intelligence to have each dealer in turn insist the products of those other reputable concerns were little more than collections of junk, built to deceive and defraud none-too-bright housewives.

Remarks of Competitors

Such remarks as these I heard:

"If you buy a ..... after the first year you'll have the service man coming oftener than the ice man does now."

"..... is just an experimental box. The company doesn't know how to make refrigerators. It is just learning how."

"Don't, above all things, buy a ..... The company couldn't sell its boxes last year. They're dumping them now at any price. Watch out, that dealer will sting you with a bum box."

"You surely aren't considering the one with the bird cage on top. They're an eyesore. And think of trying to clean it."

"I understand that company is going to drop its line of refrigerators. It can't meet the competition. You don't want an 'orphan' on your hands."

"The compressor might be all right for pumping water out of a well but it doesn't belong in a refrigerator."

"Why pay extra for a guarantee? You're not getting any more refrigeration and you're simply getting hooked with a trick guarantee."

"That company is having to replace a lot of refrigerators all over the country. They simply don't know how to make a good box."

"I'm handling these other makes just to meet competition. They're cheap because their quality is cheap."

"Oh, yes, a ..... will work pretty good if you keep it in a cool place. In hot weather you will have to turn an electric fan on it."

"That dealer is about to lose his agency. Where would you get any servicing—and you'll need it with his refrigerator—if there isn't any agency here?"

"Those other refrigerators will make your meter spin like a top. I don't care what the utility company says about its tests on power consumption."

"You might as well have an ice box as one of those inefficient affairs."

If, I nearly concluded, five of the best known and presumably the best built refrigerators had all those faults, I might just as well keep my old-fashioned ice box.

Between them, those dealers almost convinced me I was letting myself in for a lot of expensive grief. I had come expecting to buy; I went away confused and doubtful about purchasing.

Had it not been for my familiarity with the successful operation of all five types in the homes of friends and relatives, I would have decided electric refrigeration was too expensive and bothersome a toy for my limited purse.

An added insult came when one dealer, informed I had made a purchase, called by phone and implied my judgment had an off day, and had the nerve to suggest I cancel the check I had given and throw the rival box out of the house. Perhaps that is good business ethics. I don't pretend to know. But it certainly did not make a hit with me.

Disappointed Dealers

Incidentally, two of the disappointed dealers seem to have forgotten how to speak to me when we pass. Now I don't call that good business. The other day I wanted an electric food mixer. I hesitated to go to one of those dealers, fearing I'm no longer welcome. In fact, I didn't go to him, but made the purchase elsewhere. I guess the other dealer doesn't care for my trade—and I might add he will not get it.

So far as I can see, the refrigerator I bought is not falling to pieces, as I feared. It hums a bit about twice an hour, apparently as nearly mechanically perfect as any electrical appliance can be.

I am fully as convinced any one of the other four, had it suited my particular needs and purse, would be turning out frozen desserts and preserving my food just as well.

So, I am glad I bought an electric refrigerator in spite of the dealers. I am glad the "knock-the-competitor" tactics didn't deter me.

MRS. LOIS NANCE AKERS.

Stylist Plans Kitchens For R. Cooper Jr.

CHICAGO—Ernst Wagener, kitchen stylist, has been employed by R. Cooper, Jr., Inc., General Electric distributor here, to manage all of the company's kitchen planning activities, according to S. Nides, sales promotion manager.

Mr. Wagener will take over his new duties as soon as he has completed several jobs for which he is already under contract—one, the redesigning of a 110-ft. yacht interior to include, among other conveniences, a General Electric kitchen.

G-E Advertising Features Dempsey & Scientists

CLEVELAND—General Electric refrigerator advertising has struck a new note with full-page newspaper copy, captioned "Behind the Scenes with Champions."

The first advertisement of this type appeared in three colors in the main news section of the *Chicago Sunday Tribune.* In news picture page style, dramatic photos of Jack Dempsey, showing him in training and in battle, were used. News captions under the photos told the story of Dempsey's long years of training "behind the scenes" to prepare for his outstanding and spectacular performance in the right.

Then followed photos of Edison and Steinmetz, and other G-E scientists working over the G-E Monitor Top refrigerator, "behind the scenes" in the laboratories to prepare the refrigerator for its performance in the field.

12,000 Attend 4-Day Cooking School

NEWPORT, Ky.—More than 12,000 persons attended the four sessions of the Newport cooking school, held here March 20, 21, 22, and 23 under the auspices of the Union Gas & Electric Co. and featuring Laura Judd Bryant, home economist.

A Crosley Shelvador electric refrigerator was the grand prize given away at the school, and was presented to Mrs. Catherine Guerrea by Milton Marx of Lewis Marx & Bros., Newport Crosley dealer, and Matt Williams, Crosley Distributing Corp. representative.

G-E Finances $6,580,473 In Sales During 1933

NEW YORK CITY—General Electric Contracts Corp., formed last year to assist in the financing of sales of G-E electrical appliances, did a gross business of $6,580,473 in 1933, according to the forty-second annual report of the General Electric Co., issued recently.

General Electric Contracts Corp. showed a small profit before provision for approximately $50,000 of organization expenses.

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Registered U. S. Patent Office

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Metropolitan Markets

PURCHASERS of the 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK will soon have in their hands an unusually valuable collection of statistical material bearing on the refrigeration industry—a collection which should prove of direct aid to almost anybody connected with the industry whose job entails planning for the future.

Among the compilations of figures to be found in the statistical section of this remarkable book is a set of data on metropolitan markets—trading areas adjunctive to cities of 100,000 population or more—prepared by the Rodney E. Boone Organization of New York City. Looking over this graphic display of statistics on the major markets for electric refrigerators, it becomes easy to understand why New York, Chicago, Philadelphia, Los Angeles, Detroit, and other major cities gobble up the biggest part of the electric refrigeration industry's production each year.

The extent of the market offered by city trading areas in the 100,000-and-more population group can be better visualized when it is seen that these big city areas are occupied by a total population of 64,799,990 persons, representing 52.8 per cent of the population of the United States. In these same communities are included 13,520,727 wired homes, or 67.4 per cent of all wired homes in the country. Generally speaking, one home is wired for each five persons living in these big areas.

On this basis, then, at least one out of every five persons located in these trading areas should be a potential customer for household electric appliances. Since five persons comprise an average family, it would seem that almost *every* family in these areas should be a potential user of electric refrigeration! Many, of course, have already been sold various appliances; others, no doubt, are remote prospects; but, by and large, the "100,000 group" would seem to contain a lion's share of the buying public.

The national average saturation for household electric refrigerators, as determined by ELECTRIC REFRIGERATION NEWS, is 23.5 per cent, as of Jan. 1, 1934. Applying this figure to the number of wired homes in the "100,000 group" it may be estimated that 3,177,371 household electric refrigerators are in use in these big city areas, leaving a potential unsaturated market of 10,343,356 wired homes, or 76.5 per cent of the total big city market. This figure, however, is probably high.

Population in the New York City trading area totals 11,091,815, representing about 70.4 per cent of the population of the entire state. There are 2,754,525 wired homes in the area, giving it 73.9 per cent of the total reported for New York State. Buffalo, and its surrounding trading area, has a population of 1,015,833, or 6.4 per cent of the state total, while wired homes number 220,553, or 5.9 per cent of the total for the state.

With 557,305 population, the Rochester area represents 3.5 per cent of the population shown for the state, while its 116,711 wired homes give it 3.1 per cent of the New York State wired homes. The Syracuse area has a population of 438,471, giving it 2.8 per cent of the people in the state, and wired homes are 95,970 in number, amounting to 2.6 per cent of the whole state.

Albany, the state capital, and its trading zone with 516,549 residents, claim 3.3 per cent of the state population, and 119,831 wired homes give it 3.2 per cent of the aggregate for the state. Utica has 243,583 population, or 1.5 per cent of the state population, while its 48,508 wired homes represent 1.3 per cent of the number in the state. Six large-city trading areas of New York State thus contain 13,863,556 people, being 87.9 per cent of the total state population and 11.3 per cent of the population of the entire United States.

These same six cities have a total of 3,356,098 wired homes, representing 90.0 per cent of the total number in the state and 16.7 per cent of all wired homes in the United States.

In Pennsylvania, the Philadelphia trading area has a population of 3,374,512, composing 32.7 per cent of the state total, while wired homes in the area are 701,230, or 37.2 per cent of the number in the entire state. Pittsburgh, the second city of Pennsylvania, and its trading zone, are credited with 1,698,519 people, or 16.5 per cent of residents in the state, and wired homes are shown at 310,542 being 16.5 per cent of the state aggregate.

Scranton and surrounding area have a population of 310,397, which gives 3.0 per cent of the state population, and its 56,239 wired homes, make up 3.0 per cent of those in the entire state. Residents of Reading, Pennsylvania area, number 231,717, being 2.2 per cent of those in the state as a whole, while homes wired in the area are shown as 42,869, or 2.3 per cent of the state total. Erie, and trading area, boast 175,277 population, or 1.7 per cent of the state total, and wired homes amount to 39,822, giving 2.1 per cent of the Pennsylvania total.

These five large cities, together with their trading areas, aggregate 5,790,422 persons, representing 56.1 per cent of the total population of the state of Pennsylvania, and 4.71 per cent of all people in the United States.

Of the total state wired homes, 1,150,702, or 61.1 per cent, are located in the trading areas of these five cities, and they have 5.69 per cent of all wired homes in the country.

Only two cities of over 100,000 population are found in Illinois, but one of them, Chicago, is the second largest in the entire country. The population of the Chicago trading area is given at 4,664,149, representing 62.3 per cent of the population of the state of Illinois. There are 1,118,692 wired homes in the Chicago trading zone, giving it 70.5 per cent of the number of wired homes in the state. Peoria, and its adjoining area, contain a population of 206,215, which is 2.7 per cent of the Illinois total. Wired homes number 38,142, or 2.4 per cent of all those in the state.

These two cities and their adjoining trading zones, with 4,870,367 residents, take in 65.0 per cent of the total population of the state of Illinois, and 3.96 per cent of the U. S. total. In all 1,156,834 wired homes are to be found in these two city areas, representing 72.9 per cent of the number in the state, and 5.78 per cent of the wired homes in the United States.

Major cities and their trading areas in these three states thus have an aggregate population of 24,524,345 persons or nearly 20.0 per cent of all people in the entire United States. These same city areas account for 5,663,634 wired homes, which is more than 28.0 per cent of the wired homes of the country.

Further review of the Boone figures serves to confirm the conclusions which may be drawn from the excerpts cited above. When the metropolitan trading areas of three states—particularly when one big state has only two cities of more than 100,000 population—have within their confines more than 28 per cent of the wired homes of the entire nation, it would seem that intensive distribution, rather than the extensive variety, might be indicated as the order of the day in 1934, even as it has been in the past.

If You Have Questions Like These— See the 1934 Directory

Refrigerator Accessories

Hughes-Bozarth-Anderson Co.
15 E. Grand Ave., Oklahoma City
Editor:

Will you please advise us if you have the address of manufacturers who make refrigeration accessories—such as egg baskets, cheese baskets, and other items used to clamp on to the shelves of refrigerators and sold as accessory items.

F. L. HOLLAND,
Mgr., radio & refrigeration.

Pfeifer Bros.
Little Rock, Ark.
Editor:

We desire to purchase deep trays and hydrators for electric refrigerators.

Please give us the names and addresses of manufacturers from whom we may purchase direct.

O. C. STEGMAR,
Mgr., refrigeration dept.

Answer: See "Refrigerator Accessories" on page 278 of the 1934 REFRIGERATION DIRECTORY.

Kerosene Refrigerators

Wm. Reagan & Sons
Mount Olive, Ill.
Editor:

Through the courtesy of the Ansul Chemical Co. your publication was referred to me as a source of information in regard to kerosene burning refrigerators.

Any data as well as any detailed information along with the names and addresses of manufacturers of oil-burning refrigerators will be greatly appreciated.

V. B. REAGAN.

Ivan Allen-Marshall Co.
Atlanta, Ga.
Editor:

Can you give us any information with reference to a refrigerator operated by kerosene?

Would you be good enough to give us the name and address of such a factory and very much oblige.

IVAN ALLEN,
President.

General Electric Supply Corp.
1801 N. Lamar St., Dallas, Tex.
Editor:

We have a customer who is desirous of obtaining the names of manufacturers who make mechanical refrigerators operated by a kerosene burner.

F. T. EALAND,
Appliance sales.

Answer: For manufacturers of absorption type household refrigerators see page 274 of the 1934 REFRIGERATION DIRECTORY.

Household Refrigerators

Gas Refrigeration Corp.
18 E. 41st St., New York City.
Editor:

Will you kindly send me information regarding various makes of domestic refrigerators, showing which companies are still in business?

STUART OTTO,
President.

Answer: Manufacturers of household electric refrigerators are listed in the 1934 REFRIGERATION DIRECTORY beginning on page 262.

1933 Sales

The Elliott-Lewis Co.
2518 N. Broad St., Philadelphia
Editor:

Would you be kind enough to send to us a complete set of statistics covering the sale of electric refrigeration for 1933.

We are giving serious consideration to the development of electric refrigerator sales, domestic only, and we would greatly appreciate any information you can give us that will show the trend of sales during the last year.

T. H. LEWIS,
Vice president.

Answer: See statistical section of the 1934 REFRIGERATION DIRECTORY beginning on page 452.

Sales by States

The Sparks-Withington Co.
Jackson, Mich.
Editor:

The writer would appreciate to receive, if it is available, a survey of refrigeration sales by states.

E. T. H. HUTCHINSON,
Sales manager.

Postal Telegraph
Editor:

Kindly wire us collect sales of electrical refrigerators for the year 1932 for Illinois, Indiana, Iowa, Michigan, and Wisconsin separately.

R. D. CAHN,
Chicago Tribune Planning Dept.

Answer: For industry sales by states in 1932 see page 480 of the 1934 REFRIGERATION DIRECTORY.

Monthly Sales

Postal Telegraph
Editor:

Please mail us Nema figures on refrigerators sold in New York State from January, 1933, to latest date you have them showing sales by months. We are attending convention next week and would like to have these figures to estimate our quota for this territory.

North American Radio Corp.
1845 Broadway, New York.

Answer: See page 557 of the 1934 REFRIGERATION DIRECTORY for Nema sales by states in 1933.

Statistics

Mance Heating & Refrigerating Co.
27 Whitney Ave., New Haven, Conn.
Editor:

Will you kindly give us a list of electric refrigerator manufacturers and their addresses together with an approximate estimate of their yearly output in number of boxes.

G. R. MANCE.

Answer: For manufacturers of household electric refrigerators see page 262 of the 1934 REFRIGERATION DIRECTORY. Sales figures will be found in the statistical section beginning on page 470.

Wired Homes

Tennessee Valley Authority
Knoxville, Tenn.
Editor:

The information given me on the number of wired homes is of so much value that I am presuming to ask you for more of the same. I am enclosing two lists—one of all counties in the seven Valley states, and one of Valley counties only. If you have the figures available on the number of homes wired for all counties, I would appreciate it very much if you would fill in in the space after each county. If you cannot give it to me for all counties, but can for the list of valley counties, I would appreciate that. Also, please give me the number of electrified homes for the eight additional communities which I have attached.

TED LEITZELL,
Administrative assistant,
Compilation of basic data project.

Answer: Wired homes by cities and counties will be found in the 1934 REFRIGERATION DIRECTORY beginning on page 575.

Gas Masks

Schwegler Bros., Inc.
391 Ellicott St., Buffalo
Editor:

For some time we have been trying to get some gas masks suitable for service men on refrigeration. At times we are called upon to repair a bad gas leak on SO_2, and should really have masks when doing this work. If you can give us any information as to where we can purchase them, we would appreciate it very much.

S. J. SCHWEGLER.

Answer: See "Safety Appliances" on page 288 of the 1934 REFRIGERATION DIRECTORY.

Artificial Foods

The May Co.
Cleveland
Editor:

Kindly advise us where we can buy artificial foods for display purposes in electric refrigerators.

N. P. WRIGHT,
Department manager.

Answer—See page 308 of the 1934 REFRIGERATION DIRECTORY.

Insulation

Markt & Hammacher Co.
193 West St., New York City
Editor:

We have an inquiry from abroad for emulsified rubber which is used for the insulation of refrigerating apparatus and wonder if you could give us the names and addresses of manufacturers of this particular product.

G. LAWPARTER.

Answer: See page 158 of the 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK.

Beer Coolers

S. Birkenwald Co.
Portland Ore.
Editor:

We are trying to contact some manufacturers of metal novelty beer cabinets and ask that you kindly give us a list containing some of the most reputable concerns that are in this field.

We would also like to get in touch with some concern which could furnish us with the metal parts or stampings necessary to assemble such an all-metal cabinet in our own factory.

S. MARKEL.

Answer: For beer cooler manufacturers see page 151 of the 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK. Companies doing metal stamping work are listed on page 307.

DELIVERY OF 1934 REFRIGERATION DIRECTORY STARTS THIS WEEK

Table of Contents Indicates Size of Directory Sections

The 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK contains a complete list of manufacturers of refrigeration systems, equipment, parts, materials, supplies, production and service tools, related products, companion merchandise, material handling equipment, and other devices and services used by the industry. Also detailed specifications of all models of all makes of household and commercial refrigeration equipment, and beer coolers; and all available statistical data on past sales of refrigeration equipment and the potential future market. Table of contents follows:

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Impressive Volume of 692 Pages Contains Wealth of Statistical Information about the Industry and Its Market

DETROIT—The first complete copy of the 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK was delivered to the Business News Publishing Co. yesterday (Tuesday). Shipment to subscribers who have paid-in-advance orders on file will start immediately and those in nearby territory should receive delivery by parcel post this week. Copies designated for distant points will be shipped by prepaid express and should arrive early next week.

A thirty-two (32) page pamphlet containing sample pages from the various sections of the DIRECTORY will be mailed to all subscribers of ELECTRIC REFRIGERATION NEWS within a few days. This brief prospectus will enable readers to obtain a general idea of the character of the book.

A blank will be enclosed for convenience in ordering the DIRECTORY alone or in combination with a new or renewal subscription to ELECTRIC REFRIGERATION NEWS.

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ENGINEERING

Louvred Drip Pans Permit Freer Circulation Through New Peerless Cooling Units

By A. F. Hoesel, Chief Engineer, Peerless Ice Machine Co.

IN announcing the new "Flash Cooler," Peerless Ice Machine Co. presents a new type of lowside for commercial application which, although a logical development, contains a number of new features. It consists of a complete lowside, the component parts of which are the fin coil and the "Direct Flow" high humidity drip pan. Up to the present time little attention has been paid to the baffles and drip pans in the average commercial cooler. The ice machine dealer installed coils to fit the old ice baffles that were in place, or in case a new cooler was installed a standard single or double deck drip pan was used.

There has been a lot of confusion in the trade as to height from ceiling, width of warm and cold air ducts, and there has been no standard worked out as yet.

Fig. 1 shows the standard type of fin coil installation in use in 1928. It will be noted that a high narrow fin coil was used with a baffle and drip pan just covering its dimensions. In the past when ammonia was the standard refrigerant for small commercial installations, iron pipe coils provided the lowside and these were arranged in high narrow banks. The fin coil naturally took the same shape in the refrigerator.

1928

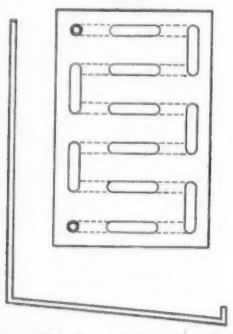


Fig. 1—High, narrow fin coils were the type installed in 1928.

Fig. 2 shows a later development, approximately 1930, of the same idea. Some dealers found that by turning the 1928 coil on its side better results were secured.

1930

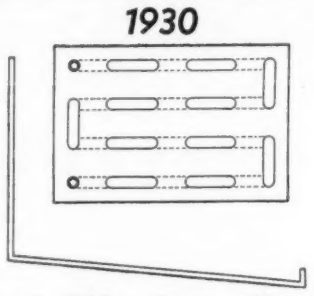


Fig. 2—Wider, shorter coils were next developed.

Fig. 3 shows the further trend of this development in which the fin coil surface is spread out horizontally in the box. Better results were secured with this development although not much attention was paid to height from ceiling or width of the cold air duct.

From examining any of these sketches it can be seen that the cold air spillway is relatively small. In other words, the volume of air that can get out of such a baffling arrangement necessitated carrying the coil at an extremely low temperature in order to provide proper temperatures for the main refrigerator.

1932

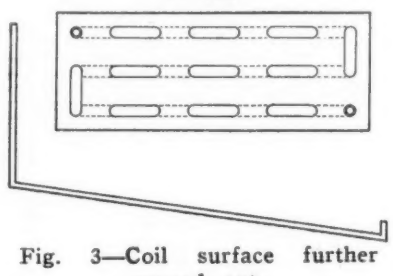


Fig. 3—Coil surface further spread out.

Because a small cold air spillway was used it was found that the distance of the coil from the ceiling made very little difference. It is easy to see that no more air could get into the top of the coil than could escape from the bottom, and naturally the distance from the ceiling became a minor factor.

In the new "Flash Cooler" a different type of cold air spillway has been perfected. Coils 3 in. in height are spread over a substantial portion of the ceiling surface of the box. By providing a special type of louvred drip pan, and mounting the entire assembly at a distance from the ceiling, uniform circulation is provided. It is a natural development of the trend of the past few years.

As shown in the illustration, the louvred drip pan is constructed entirely of polished aluminum, presenting a modernistic appearance in the refrigerator and providing the low side with "eye appeal." This particular part of the ice machine installation has always been considered a necessary part of the complete job, but a part in which the sales "eye appeal" could not be used.

Because the air descending through the louvres is the same temperature on both sides of each louvre, there is no condensation formation thereon. The louvred drip pans are bent to collect the drip from the coils, discharging it into the collector trough at the end of the entire assembly.

One of the features of this type of installation is the "four square" circulation in the refrigerator. As is well known, the heat seepage through a refrigerator occurs on all four sides, and there is a slowly ascending column of air up each of the four walls of the refrigerator.

In the past the standard single or double-deck arrangement has thrown the cold air down against two or more of these walls resulting in improper circulation in the box, condensation of moisture at various points of the box, and variations in temperature in different parts of the box.

The "Flash Cooler" is centered in the refrigerator at approximately equal distance from all four sides. The louvred drip pan discharges the cold air in a descending column in the center of the box from which it spreads along the floor and joins the naturally ascending warm air of the four side walls, turning at the ceiling and falling directly into the coil.

The coil being spread out over a large area provides what might be termed a suction to pull this warm air down into the coil. This provides a natural type of circulation in a walk-in cooler.

Due to the fact that the surface is spread out horizontally and that full circulation of warm air is secured over every portion of the coil, the entire coil operates at a high "K" factor. It has been shown repeatedly that coils built on top of each other have a low overall "K" factor in spite of the fact that an individual finned tube might have a high "K" factor.

By spreading out the coils as in the "Flash Cooler," a smaller size compressor can generally be used to handle a job, due to the improved "K" factor.

Because of the centralized location of the cooling unit and the full free flow of the cold air down through the unit, meat and products stored as they usually are on the four walls of the box are maintained at the same temperature and humidity conditions. There is no difference between the end, corner, or side positions in a box equipped with the Peerless "Flash Cooler."

Those familiar with the preservation of meat are struck by the fact that while the packing houses are able to preserve meat for periods ranging from one to three months without spoilage, the average retail market finds it hard to preserve meat for a period of two weeks or longer in spite of the fact that the average commercial machine will maintain the necessary temperatures in the refrigerator.

This difference in results between the retail store and the packing plant is explained entirely by the matter of air circulation. In the packing plant refrigeration is in process 24 hours a day at all times of the year, providing constant circulation of air around the meat. In the retail store the refrigeration load varies so definitely that in average weather there is no circulation a greater share of the time.

Many refrigeration dealers are familiar with the fact that meat in the retail market is preserved best in the hottest weather. Probably they have not given much thought to this anomaly, but the reason for it is that the machine has to operate so much longer in the warm weather to maintain temperature that proper circulation is maintained. In the fall, winter, and early spring months, many butchers are in the habit of not heating their stores in order to save on their refrigeration and the result is wet smeary meat that is difficult to sell.

To remedy this condition, the "Flash Cooler" has a special humidity regulating valve installed in the suction line to compensate for the lack of operating time. Thus a full, even, uniform circulation is maintained throughout the box at all times.

This is a definite effort to provide proper "packing house refrigeration" to the retail user. By controlling the operation of the machine any desired humidity may be maintained in a refrigerator.

There have been various methods employed to raise the humidity in refrigerators, some involving the use of forced air circulation or additional spraying means.

When one considers that in reducing the outside temperature from, say, 80° to 34°, a considerable amount of moisture must be removed from the air; and that it is impossible to lower the temperatures in this manner without removing moisture from the air; it can be seen that by properly controlling this moisture removal, any desired humidity may be maintained without recourse to further spray methods.

Forced air coolers have had a certain vogue in cooling of refrigerators. Their first applications involved intermittent use of the unit cooler and high humidities were claimed. It was soon found that while a high moisture content was maintained in the air, the speed at which this air was driven over the products produced a drying out effect.

It was also found necessary to operate the fan motor continuously, otherwise the lack of circulation would cause the meats to smear and become sticky in the high humidity atmosphere created by the fan cooler during operation.

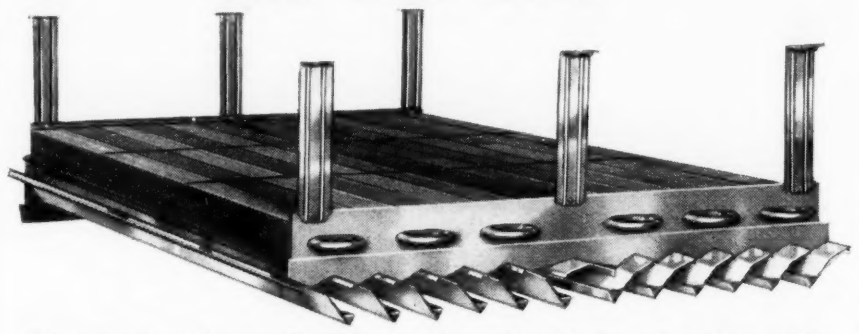
Other disadvantages were soon apparent in fan cooler operation. Meats in certain portions of the box (where the air could not strike them) smeared quickly even though the fan was operating. It was also discovered that the fan circulation greatly increased heat leakage through the walls swept by the forced air—causing an increased power bill, and sometimes requiring a larger size compressor to carry the load.

While Peerless includes a fan cooler in its general line of lowside accessories, a word of caution in their use has always been necessary. The wide variations in humidity with this type of equipment is a limiting factor in its use.

The Peerless "Flash Cooler" might be termed a compromise between the old style coils and the unit cooler or forced air method of refrigeration. By providing a large flat coil surface with unobstructed air flow in and out, uniform air circulation is secured (the coils in the meantime operating at the highest possible back pressure), and proper humidities and temperatures are maintained. All of this is accomplished without resorting to additional fans or motors.

While this louvred style of drip pan is not in itself new, having been used in the past with ice, it has not been widely used with fin coils. Certain elements of design are necessary to secure proper results of such a drip pan with fin coils and these essential differences compose the basis of Peerless' pending patents on this system.

New 'Flash Cooler'



Photograph of the new Peerless cooling unit, with fin coil surface which spreads over a substantial portion of the ceiling of a refrigerated cooler.

End View

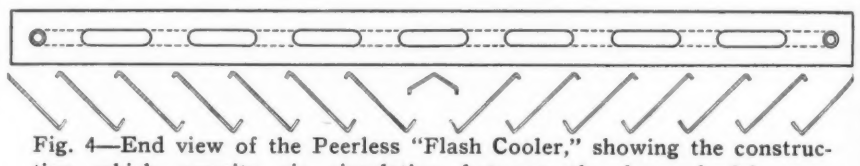


Fig. 4—End view of the Peerless "Flash Cooler," showing the construction which permits air circulation between the louvred drip pan.

Refrigerative Supply to Wholesale Parts In Seattle

SEATTLE — Refrigerative Supply, Inc., has been formed here for the purpose of wholesaling refrigeration parts and supplies to service men of the Pacific Northwest.

The company was incorporated by H. G. Stern, president; P. F. Apfel, secretary treasurer; and W. J. Hieber, vice president.

Mr. Stern was for a number of years zone manager for Frigidaire Corp. in the Pacific Northwest. Mr. Stern is a graduate engineer (Cornell) and was at one time manager of a local ice cream plant.

Mr. Hieber was formerly assistant service manager for Frigidaire Corp.

Mr. Apfel has been an electric heating engineer and designer of devices for electric heating equipment.

Offices of the Refrigerative Supply, Inc., are at 600 Harrison St., Seattle.

Engineers Explain Boulder Dam Work

(Concluded from Page 1, Column 5)

Las Vegas to the city and from the city to the dam site. This last section of the road was particularly difficult since the city is nine miles from the dam, and some 900 ft. above it with most of the road being chiseled out of solid rock.

"In the construction of a dam," he continued, "the first step is the building of a coffer dam, to keep the water away and a series of diversion tunnels to carry the water around the dam site and back to the river at the lower side.

"At Boulder Canyon, in order to afford adequate protection against extreme flood conditions which occur in the Colorado River, four 50-ft. diversion tunnels, each about three-forths of a mile long were constructed. These tunnels were first drilled through solid rock and then lined with 3 ft. of concrete. All four tunnels were completed in less than a year and into the lining was poured about 370,000 yards of concrete.

"When the water behind the dam has risen to its maximum height, a lake 130 miles long will have been created and after making a trip up the river from the dam site to the lower end of the Grand Canyon, I can assure you that this lake will be one of the scenic spots of the West," the speaker declared.

"Concrete for the dam itself is poured from buckets handling about 8 cu. yds. and the maximum rate of pouring is one bucket a minute which is equivalent in 24 hours to a concrete road 20 ft. wide and 2 miles long. The heat generated in the setting of the concrete, if not removed by refrigeration, would required some 125 years to be dissipated.

"This is due to the extreme distance from the center to the outside surface of the completed dam. Also in the cooling procedure, the shrinkage would cause the development of cracks, which across the entire width of the dam face would total a half inch. As you may imagine, the seepage through these cracks if not eliminated, would be considerable.

"From each cubic yard of concrete, must be removed approximately 865 B.t.u.'s for each degree which the concrete is cooled. It is estimated that in the entire dam, 128,345,000,000 B.t.u.'s must be removed, which is equivalent to the melting of 445,000 tons of ice," Mr. Royden explained.

"In order to obtain information on the actual amount of refrigeration required, the Bureau of Reclamation experimented in the Owyhee Dam in the Northwest. From the data obtained there, the necessary refrigerating equipment for Boulder Dam was calculated. This equipment is located below the dam, but above the lower coffer dam.

"At 90° F. outside temperature, the temperature of the concrete is 130° F. and is brought down by river water or water cooled by the cooling tower for a period of six weeks.

"For an additional six weeks, refrigerated water at 40 to 45° F. is used, bringing the concrete to the final temperature. The lines through which the water is pumped, are composed of 1-in. tubing placed in the concrete on 3-ft. vertical centers and 3-ft. 7-in. horizontal centers. Down the center of the dam, in the direction of the stream flow, is a vertical slot 8 ft. wide, through which all of the cooling water lines are run," he said.

The 1-in. lines in the concrete are connected to 6-in. headers in this slot. The main feed lines between the power plant and the dam are 14 in. in diameter. One pair for precooling water and one pair for refrigerated water. The cooling tower is located on the lower coffer dam and has a capacity of 6,000 gals. per minute, is 16 ft. wide, 43 ft. high, and 116 ft. long. One half is used for cooling the initial water which is circulated through the dam and the other half is used for condenser water for the refrigerating equipment.

The capacity of the refrigerating plant, which is of the high suction pressure type, is 1,000 tons and is operated at approximately 55 lbs. suction pressure. The plant consists of three duplex Ingersoll-Rand single-stage compressors having a 10-in. bore by a 14-in. stroke, and operating at 257 r.p.m. These compressors are driven by 250-hp. electric motors, he continued.

"It is interesting to note that in order to save expense, these three refrigerating compressors were originally operated as air compressors. When work was started, a great deal of air was used in drilling the tunnels and cleaning off the rock faces at the sides and bottom of the canyon. During this time, these compressors were equipped with air cylinders and heads and by the time they were needed as refrigerating equipment, the air load had been considerably reduced so that the three compressors could be taken from this load without the purchase of additional equipment.

"At the time the compressors were moved to the refrigerating plant, new ammonia cylinders were fitted to the compressors in place of the air cylinders," Mr. Royden stated.

The installation, operating on the flooded system, uses an accumulator 4 ft. in diameter and 7 ft. high. The water coolers are of the four-pass shell-and-tube type, three of them being used. They are all mounted horizontally on the same plane, with the accumulator mounted between two of them, a float maintaining a liquid level close to the top of the coolers.

Since the largest float obtainable was a 2-in. one with a capacity of 350 tons, it was necessary to have two hand-operated expansion valves to help it along. The coolers are connected to the bottom of the accumulator by 4-in. liquid lines with 6-in. suction lines leading back to the accumulator at the top.

From the accumulator, a single 12-in. suction line carries the gas to the compressors. Protective devices for the plant consist of pressure alarm in the cold water system to prevent freezing, and a second alarm in the condensing water in order to protect the installation from high head pressure.

The plant is also completely equipped with high to low side relief valves and individual high pressure cut-outs on the compressors. The three shell-and-tube water coolers are each 20 ft. long having 364 one-inch tubes, with water circulation arranged in four passes. The three shell-and-tube condensers are also four pass, 20 ft. long, each having 420 one-in. tubes. Condensers and water coolers were built by C. F. Braun Co. of Alhambra, Calif.

"There are three complete water cycles," the speaker explained, "one for condensing water for the refrigerating plant, the second for circulating precooling water through the cooling pipes in the dam, and the third for refrigerated water.

"Four 1,000-g.p.m. Cameron centrifugal pumps are installed for circulating ammonia condensing water, four 750-g.p.m. 160-ft. head, single-stage centrifugal pumps for precooling water, and the third set of four similar pumps for circulating refrigerated water.

"Approximately 60 miles of 6-in. pipe will be required for the distributing water headers, and about 660 miles of 1-in. tubing for the cooling pipes. After the dam is complete the headers will be removed and the tubing pumped full of concrete grout," Mr. Royden said in conclusion.

The second speaker was Mr. A. G. Roach, contracting manager of the Consolidated Steel Corp. of Los Angeles.

"Consolidated Steel," said Mr. Roach, "began work at the dam by building the steel trusses for the mess hall, then the steel work for the machine shops and so on, during initial construction period. The first big job, however, was the building of the steel forms for pouring concrete in the diversion tunnels. The contract for these forms amounted to $350,000.

"Concrete in the diversion tunnels was poured in four sections, the bottom, the two sides, and the top. The bottom was poured first, and at the upper edges of this section two rails were formed upon which the forms for the side sections were moved. These side sections forms were by far the most elaborate, and were made to handle both sides at once for a distance of 80 ft.

Mr. Roach mentioned as a final interesting point in connection with the construction work at Boulder Dam, the question of compensation insurance. "The Nevada-Arizona line runs down the river in the exact center of the dam, therefore accidents occurring during construction are covered by whichever state the accident occurs in.

"This is particularly important, due to the fact that the compensation laws and rates are different in both states. Accidents occurring in the slot or near the middle of the dam, when the exact state cannot be determined, are handled by dividing the compensation equally between both states."

In conclusion, a number of questions were asked, including these:

Q. How much time is required to cool each block of concrete?

A. The estimated time is about three months. For six weeks cooling tower water is used and for the remaining six weeks refrigerated water is used. It is interesting to note that the specifications require the concrete to be cooled to the lowest temperature on the upper face of the dam next to the bottom, as it is estimated the water at the lake bottom will always have a temperature of approximately 40° F., which will gradually rise to 60° F. at the surface. For this reason, the lower blocks at the upper face of the dam will be cooled to 40° F.

The contraction of the concrete is taken care of in the original cooling, and after this is completed the space between the blocks is to be filled with grout which will be pumped in through special lines.

In tests that have been made, it has been found that grout will follow every minute crack for a distance of approximately 100 ft., so that by using it after the dam is completed a single solid block of concrete will result. Another point of interest is that the vertical slot in the center of the dam is being made irregular so that when it is finally filled with concrete, it can not be pushed out by the pressure of the water.

Q. Where does the power used in the construction of the dam come from?

A. The power comes from Southern Sierras Power Co. at San Bernardino, Calif.

Q. How does the government check on the cooling produced in the blocks?

A. The one-inch refrigerated water lines run from the slot to the outside edge of the dam and return, and in obtaining the temperature in the blocks they go into the slot and shut off one of the loops of pipe. This is allowed to stand for several days until the water has reached the temperature of the concrete, after which a 50 to 75-ft. tube attached to a thermometer is pushed into the pipe.

By this means an accurate measurement of temperature is obtained. The refrigerating effect in any particular section of the dam is also checked by obtaining the incoming and outgoing water temperatures in the particular section and by using a Foxboro flow-meter. From the flow and also incoming and outgoing temperatures the refrigerating effect can be computed.

Q. Are any thermocouples used in the blocks?

A. Two are placed in each 40 by 3 ft. block, and the temperature taken by means of these thermocouples agrees very closely with the temperature measurements taken by the thermometer as described above.

Q. Are the water lines to and from the dam insulated?

A. Yes, they are insulated with 2-in. sectional cork covering. Since the blocks in the upper face of the dam must be cooled to approximately 40° F., it is necessary that every precaution is taken to prevent temperature losses from the refrigerating plant to the dam itself.

Q. What is the charge of ammonia used in the refrigerating installation?

A. 10,000 lbs.

Michigan Physicists Develop Instrument For Measuring Compressor Surfaces

By E. J. Abbott, Research Physicist
Department of Engineering Research, University of Michigan

THE time-honored method of determining the roughness of surfaces has been to look at the surface in question and then to scrape a finger nail across it. This is not a very exact method, certainly, compared to the definiteness with which the mechanical, thermal, chemical, and physical limits of the quantities used in refrigerators are specified. Recently an instrument for measuring the roughness of surfaces was developed at the physics laboratory of the University of Michigan in connection with certain projects which were being carried on for industrial concerns through the department of engineering research of the university[1].

The purpose of the instrument is to record enlarged traces of a section of surface profile and for this reason it is called a "Profilograph," pronounced Profile-o-graph.

As shown in Fig. 1, the principle of the instrument is very simple. A specimen of the surface to be measured is mounted on a small carriage. Resting very lightly on the surface is a very sharp diamond point which moves up and down over the profile as the specimen is moved horizontally.

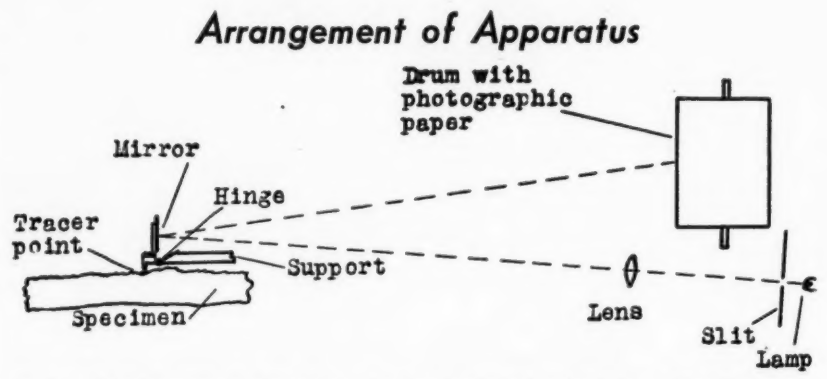


Fig. 1. Diagrammatic sketch shows fundamental principle of Profilograph.

The movements of the tracer point are magnified and recorded on a strip of photographic paper and in this way an enlarged record of the section of profile is obtained. A photograph of the instrument is shown in Fig. 2.

Among the various surfaces which have been measured with the instrument have been some used in electric refrigerators. A few of these records are reproduced here, not with the idea of commending or condemning any particular operation, but rather to indicate the type of result obtained with this instrument.

In this connection is it interesting to note that actual measurements on surfaces often yield surprising results and some arguments of long standing have been settled with the aid of the Profilograph.

Compressor Wrist Pins

Fig. 3 shows measurements taken on a pair of wrist pins used in a compressor. These records were taken in an axial direction along the surface of the pin in order to show the tool marks. Curve A was taken on a ground pin, and curve B on a pin which had a subsequent lapping operation.

From these records, it is not apparent that the additional lapping operation is justified, although measurements taken around the circumferences of the pins might show greater differences. A repeat run was made on curve A to show the accuracy with which measurements are repeated.

The irregularities of these surfaces had a depth of about 20 to 40 millionths of an inch, and to record these small distances, a vertical magnification of 2,000 was used.

If this same scale had been used in the horizontal direction, the entire record would have covered only .004", which is too short a specimen. Accordingly, the drum which carried the photographic paper on which the record was made was turned very slowly so that about ¼ inch of specimen was covered with a horizontal magnification of 30.

As a result of this choice of scales, the irregularities appear 67 times as sharp as they actually are, a point which should be kept in mind when comparing records.

Refrigerator Seal

Fig. 4 shows a profilograph of a refrigerator seal. In order to show the irregularities of this very smooth surface more clearly, a vertical magnification of 5,000 was used, together with a horizontal magnification of 150. With these scales, 1/64 inch vertically corresponds to 3 millionths of an inch, while 1/64 inch horizontally corresponds to .0001".

The entire record covers slightly less than 1/16 inch of specimen. In this case the vertical scale is 33 times as great as the horizontal scale, so that all the irregularities appear 33 times as sharp as they actually are.

With measurements such as this, it would be easy to determine the relative smoothness obtained with different methods of finishing this important part, and by subsequent operation of these measured specimens (the measurements do not affect the specimen) the practical advantage of a given degree of smoothness could be determined.

Fig. 5 shows records taken on three surfaces commonly used for final finish of compressor cylinders. Curve A is a careful job of "diamond" boring, curve B is a "bearingized" cylinder and curve C is a "mirror honed" cylinder.

The differences in smoothness are certainly striking. Of course, the question immediately arises as to the practical advantage of a smooth surface like curve C over a rough surface like curve A.

The author has no data on this point, but with the aid of the profilograph, definite studies can be made of the relation between surface roughness and wear and other associated factors. Tests in the automotive field show marked advantages in favor of smooth cylinders.

As a result of measurements taken with this instrument, which is a laboratory model and the only one of its kind in existence as far as we know, some very valuable information concerning surfaces and machining operations has been obtained and some important changes in production methods have taken place.

In comparing various surfaces, a need has arisen for a system of numbers to specify the roughness of various surfaces. As indicated by the profilographs of this article, surfaces differ not only in magnitude of roughness, but also greatly in the character of the roughness. Consequently, practical roughness specification requires not only numbers for indicating magnitude, but also means of defining character. A method of roughness specification involving three numbers has been devised which is suitable for this purpose. Space does not permit a discussion of it here, but it is described in another article.[2]

The present instrument has the obvious disadvantage that it will take only a comparatively small specimen. This objection is not so serious for many studies, but the instrument is not suitable for routine inspection.

It is hoped that the present investigations may be extended with the development of a more portable model as well as instruments for routine inspection of surfaces in production. Meanwhile it appears that a great deal of valuable information can be obtained with the present instrument.

[1] Test for Smoothness of Machined Surfaces. F. A. Firestone, F. M. Durbin, and E. J. Abbott, "Metal Progress," April, 1932, page 57.

[2] "Specifying Surface Roughness," E. J. Abbott and F. A. Firestone; "Mechanical Engineering," September, 1933, page 569.

Profilograph (Profile-O-Graph)

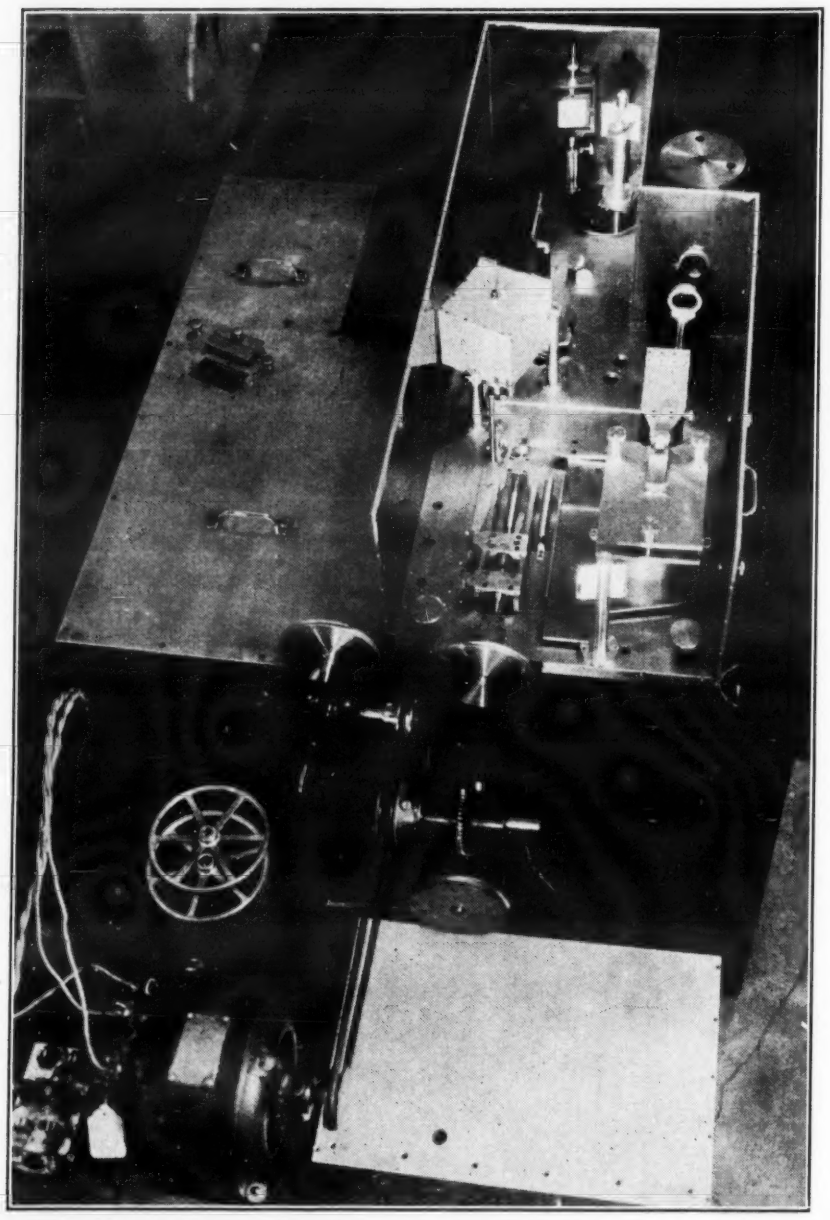


Fig. 2. Photograph of Profilograph. The specimen with the tracer system is shown in the lower right, the lamp house is at the upper right, and the drum which carries the photographic paper is in the box at left center. The small motor in the foreground drives both the carriage and the drum, through gearing. Ordinarily the running time to make a record is about 30 minutes.

Profilograph Records, Full Size

Note: Original records are about 8 in. long, so only the center half is reproduced below.

Wrist Pins

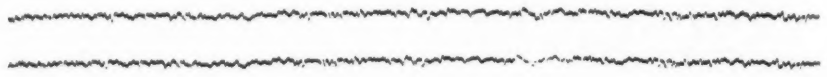


Fig. 3A. Profilograph of ground compressor wrist pin with repeat run.

Fig. 3B. Wrist pin with additional lapping operation. Magnification in Figs. 3: vertical, 2,000; horizontal, 30 (i.e. vertically, 1/32 in. equals .000015 in. and horizontally 1/32 in. equals .001 in.).

Refrigerator Seal

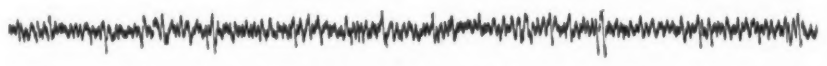


Fig. 4. Profilograph of a refrigerator seal. Magnification: vertical, 5,000; horizontal, 150 (i.e. vertically 1/64 in. equals .000003 in. and horizontally 1/64 in. equals .0001 in.).

Compressor Cylinders

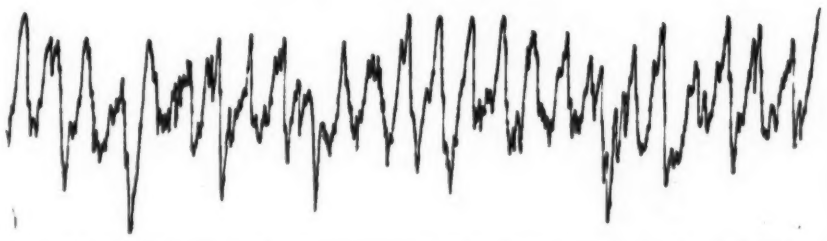


Fig. 5A. Profilograph of compressor cylinder with a "diamond bore" finish.

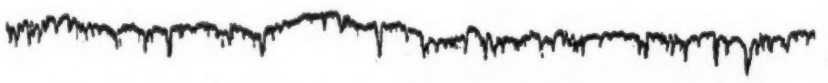


Fig. 5B. Profilograph of a "bearingized" compressor cylinder.

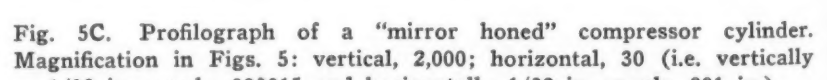


Fig. 5C. Profilograph of a "mirror honed" compressor cylinder. Magnification in Figs. 5: vertical, 2,000; horizontal, 30 (i.e. vertically 1/32 in. equals .000015 and horizontally 1/32 in. equals .001 in.).

AIR CONDITIONING

Human Beings Derive Much Energy from The Air They Breathe

By Lester Keilholtz, Research Engineer
194 E. Grand Blvd., Detroit, Mich.

SOME rather startling facts about the *air* and its effects upon human health are brought to light by a study of air conditioning. The science of air conditioning was founded early in the 20th century by Willis Carrier and his associates, but until just recently the applications of this new science have been entirely industrial so most people are not familiar with its many ramifications.

The American public spends millions of dollars annually to get pure water, pasteurized milk, government-inspected meats, and in other safeguards to insure pure and wholesome foods. As a matter of fact we should take similar measures to make sure the air we live in and breathe is as clean and pure as the food we eat.

It is said that 90% of the air breathed by the average person is indoor air. This may now be controlled (by air conditioning), but so far comparatively little has been done about it.

Energy Derived from Air

We derive about 40% of our energy from the food we eat, and about 60% from the air we breathe. If we had to pay for the air we breathe, it would probably command a higher price than the food we eat.

Our daily menu consists of 3 lbs. of food, 4 lbs. of water, and 34 lbs. of air. At 70° F., 13½ cu. ft. of air weighs a pound. This can be visualized as a cube measuring 29 in. each way.

It is said that a man can live 40 days without food, from three to four days without water, but only a few minutes without air. So in all the world there is just one thing nobody can do without for even a few minutes —that is *air*. It is the first thing a human being gasps for when born, and the last before leaving this earth. In the meantime he fills his lungs with it 17 times a minute, over 1,000 times an hour, or more than 24,000 times per day.

Effects of Pollution

Even when resting, man requires 20 to 25 cu. in. of air at each respiration. The result is that even a small amount of pollution as foreign matter in the air has serious internal effects.

The health commissioner of Chicago states that 60% more people die from respiratory ailments caused by contaminated air than from all other diseases.

Charles J. McCabe, chief smoke inspector for the city of Detroit reports the following sources of soot and dirt:

1. Chimneys and smokestacks.
2. Lint, foundry dust, machinery and industrial dirt.
3. Dust and siliceous matter from unpaved streets and alleys.
4. Dust from acreage.
5. Oily soot and ash from automobile exhausts.
6. Street dirt and attrited (frictional) matter.
7. Dust from coal piles and building erosion.

Cincinnati's Soot Fall

In downtown Cincinnati, the average monthly soot fall per square mile was recorded a few years ago by the smoke department of that city as 70 tons in one locality, and 99 tons in another.

Professor Skeldon of New York University made a determination there which showed that the air over the city of New York carries in suspension more than 4,000,000 lbs. of dirt. This is more than 2,100 tons—yet the dust and soot content there is no greater than that in many other cities.

Measurements have shown that from one to five tons of soot are deposited daily in every large city for every square mile of area. Every housewife is familiar with the *external* effects of dust-laden air, and the large amount of work it entails.

The average human being at rest gives off the heat equivalent to that from three 40-watt electric light bulbs. The average-sized man has a surface area of 19½ sq. ft.

Heat Loss of Body

This heat is lost from the body through excretion, respiration, conduction, and radiation from the skin, and by the evaporation of perspiration. Excretion accounts for only 3% of the body's heat loss, respiration about 20%, while the skin gives up about 77% by conduction, radiation, and evaporation. Thus, the skin is man's heat regulator.

Conduction is greatly increased by air motion.

When an adult is at rest in a 70° room with 20 to 30% relative humidity, 30% of the heat lost is by convection through contact with the air, 43% by radiation, and 27% by exhalation and other means.

Perspiration given off by the human body at various temperatures is as follows:

Room Temperature	Pints Per Day
65	1.7
70	2.2
75	3.1
80	4.2
85	5.4
90	6.8
95	8.1

Whatever the prevailing condition of relative humidity, there will be a constant exudation of perspiration.

Good health requires a body temperature of 98.6° F. Where there is some tendency for the human body to deviate from this temperature, the nervous system operates as a highly sensitive heat regulator to maintain it.

Effects of Temperature Changes

When body temperatures begin to rise above 98.6° F., the nervous system opens the blood channels in the skin so that more blood flows to the surface of the body—perspiration starts, and the excess heat passes into the air by evaporation, convection, and radiation. The moisture content of the air is one of the controlling factors in evaporation, hence is very important to our health and comfort.

Conversely, when the body temperature tends to drop below 98.6° F., the nervous system causes the blood channels in the skin to contract, and the warm blood moves less rapidly from the deeper, internal parts of the body where the heat must be maintained to support life.

If there was not heat in our homes during the winter months, we could not survive in cold climates because the heat loss to the cold air from our bodies would be too great.

Operation of the human body changes from summer to winter so that man can be comfortable in the winter in a room that is 5° cooler than what is required to be comfortable in the summer. The white race can stand more variations in temperature than either the colored race or Eskimos.

The *Fan Engineering Handbook* makes an interesting statement regarding the effect of humidity at different temperatures: "It is a familiar fact that for room temperatures, an increase in humidity increases one's sense of warmth. On the other hand, for out-of-door temperatures in winter, we find that an increase in humidity produces a cooler sense. This condition, or dividing line, where humidity has no effect on comfort, changes with the air velocity at 46° F. in still air, and 51, 56, and 59° F. for air velocities of 100, 300, and 500 ft. per minute respectively."

That explains why we feel so cold on a cool, damp day.

Many experienced physicians agree that man's own sensorium is one of the most sensitive and accurate indicators of his true state of health. Just as man's appetite is a highly reliable indicator of his food requirements, it would seem logical to assume that what is comfortable is also a reasonably healthful condition.

Figures on the relation of indoor relative humidities to respiratory diseases, furnished by the United States Health Service. Note the sudden drop from October to November and again in December.

Month	Average Indoor Humidity	Cases of Respiratory Disease Per 1,000 Population
September	50%	23
October	40%	29
November	20%*	40†
December	12%*	58†
January	12%*	92†
February	14%*	102†
March	18%*	89†
April	25%*	55†
May	35%	35
June	57%	22

*Low humidity months.
†Poor health months.

Promoted by Trane

R. H. ANDEREGG
New vice president of Trane Co. in charge of engineering.

Carrier's New York Dealer Gets Extended Territory

BROOKLYN — Carrier Engineering Corp. has extended the sales territory of its local dealer for Carrier-Brunswick commercial refrigeration, Specialty Service Corp., to include the Manhattan and the Bronx.

Carrier's New York district sales office will cooperate closely with the Specialty Service Corp.'s field men and headquarters office.

Dewey to Manage Gar Wood Division

DETROIT—Frank H. Dewey, formerly sales manager of the Wood Hydraulic Hoist & Body Co., which has recently been succeeded by Gar Wood Industries, Inc., will serve as manager of the air-conditioning division of the new company, according to Logan T. Wood, vice president and general manager of the parent firm. C. J. McCaffrey will continue as sales manager of air-conditioning division.

One of the featured units in the Gar Wood line is a split or indirect system consisting of a boiler-burner unit and an air-conditioning cabinet, in which the temperature of the air is raised by contact with a heating element in the cabinet. With this system part of the house can be heated with steam and the other part with conditioned air.

2,000 Railway Cars to Be Air Conditioned

WEST ORANGE, N. J.—More than 2,000 railroad passenger train cars are to be modernized this year with air-conditioning apparatus at an estimated cost of $12,000,000, G. E. Stringfellow, vice president of Thomas A. Edison, Inc., predicted recently.

Several of the leading trunk-line railroads are participating in this program to meet the competition of air lines, busses, and automobiles.

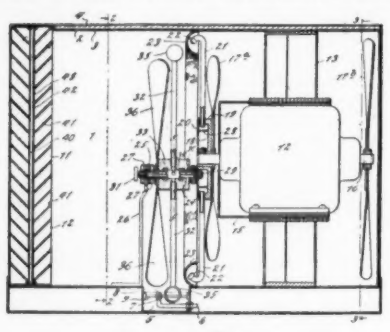
"While public attention is being attracted to the spectacular plans for streamlined trains operating at high speed," the Edison executive said, "equally important advances are being planned to improve the comfort of those traveling on the present standard trains."

PATENTS

Issued March 20, 1934

1,951,962. COOLER. Frank G. Baum, Cassel, Calif.; Ester F. Born executrix of said Frank G. Baum, deceased. Application February 11, 1931. Serial No. 514,929. 11 Claims. (Cl. 261—29.)

2. An air conditioner comprising a casing having air inlet and outlet openings, a motor mounted horizontally within



1,951,962

the casing, a fan secured to the motor shaft and adapted to be rotated thereby in a substantially vertical plane for causing a movement of air through the casing, a hub secured to the shaft of the motor and having an outer peripheral portion of channel shape in cross section, the flanges of the channel shaped portion extending inwardly, arms extending from said hub and having passages therethrough longitudinally thereof in communication with the channel formed in the hub, spray devices on said arms, a reservoir in the bottom of the casing, and means for raising water from the reservoir to the channel formed in the hub.

11. In an air conditioner, a casing having spaced inlet and outlet openings therein, an electric motor disposed within said casing, the shaft of said motor extending through opposite ends of the motor frame toward the openings in said casing, fans within said casing mounted on the extended ends of said shaft for causing air to flow through said casing by way of said openings, a transverse screen within said casing between said fans, a rotary spray distributor likewise mounted upon said shaft in advance of said screen and means for supplying water to the distributor.

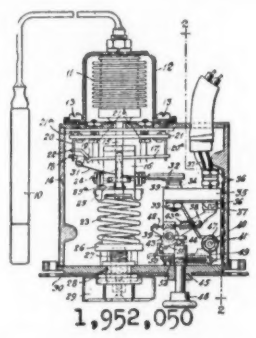
1,951,997. AIR CONDITIONING SYSTEM. Charles A. Seitz, Tecumseh, Mich., and James C. Bostain, Cincinnati, Ohio, assignors to The Williamson Heater Co., Cincinnati, Ohio, a corporation of Ohio. Application June 12, 1931. Serial No. 543,796. 2 Claims. (Cl. 257—8.)

1. A closed or recirculating air conditioning system for buildings having rooms and a basement compartment, said system comprising in combination an air heating means having a bonnet associated therewith, a single enlarged air mixing delivery duct of capacity sufficient to carry the entire hot air output of the air heating means, said single enlarged duct being in communication with the bonnet and projecting therefrom in a straight line substantially horizontally adjacent to the ceiling of the basement compartment and terminating therein, a series of individual small diameter pipes communicating with the uppermost region of the air delivery duct for conveying heated air to the individual rooms of the building, said individual pipes being disposed within those walls of the building which provide partitions for the rooms, the termini of such pipes being located at the floor line, a second enlarged elevated duct providing a single air return means having substantially the same carrying capacity as the single delivery duct and paralleling the first duct and likewise having a terminal end in the basement, an air cooling compartment having an open upper portion communicating with said second duct at a location on the same level as the single delivery duct, the cooling compartment having an opening at its bottom communicating with the air heating means, a series of individual small diameter pipes connected to the elevated horizontal air return duct at intervals for exhaust of air from the individual rooms, said last mentioned pipes being located within those walls of the building which have one face exposed to the weather, the terminal ends of said pipes being located at the floor line, and means for effecting positive circulation of air through the system.

Issued March 27, 1934

1,952,050. DEFROSTING MECHANISM. Frank J. Bast, Queens Village, N. Y., assignor to Charles J. Tagliabue Mfg. Co., Brooklyn, N. Y., a corporation of New York. Application March 17, 1932. Serial No. 599,380. 12 Claims. (Cl. 62—4.)

1. In a temperature control system for controlling the motor of an automatic electric refrigerator, the combination of



1,952,050

a housing, a temperature responsive mechanism arranged in said housing, means arranged to be operated by said responsive mechanism for controlling the circuit of the refrigerator motor at one point therein, a switch operable to control said circuit at another point therein, and safety mechanism automatically operative when an excessive flow through said circuit occurs to move said switch to open said circuit.

1,952,148. REFRIGERATING APPARATUS. Elmer O. Stout, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a corporation of Delaware. Application July 1, 1929. Serial No. 375,081. 2 Claims. (Cl. 62—126.)

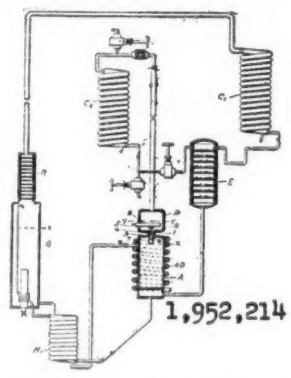
1. An evaporator comprising a sheet of metal, a second sheet of metal separate from said first named sheet of metal but cooperating therewith to provide a plurality of double walls of a freezing compartment, said separate sheets of metal being joined together at their corresponding ends and edges and having portions thereof spaced apart to form refrigerant conveying duct means between said double walls having oppositely disposed and inwardly extending reverse bent portions formed integral therewith, each of said reverse bent portions forming refrigerant conveying duct means, the duct means formed by said reverse bent portions being separated from one another and each being in communication horizontally a substantial distance inwardly of the walls of the freezing compartment, and said integral reverse bent portions cooperating with one another to bridge substantially the entire width of the freezing compartment to divide the compartment into a plurality of compartments and to provide a refrigerated shelf for supporting a receptacle to be cooled.

1,952,159. INSULATION FOR REFRIGERATOR CARS. Henry Donovan, Chicago, Ill., assignor to North American Car Corp., Chicago, Ill., a corporation of Illinois. Application Dec. 5, 1931. Serial No. 579,267. 7 Claims. (Cl. 62—91.5.)

1. A refrigerator car adapted for shipping solidified carbon dioxide, the car comprising insulated side walls, floor and roof, and insulated partitions separating the interior of the car into a plurality of separate compartments, the side walls, floor and partitions being permanently closed and imperforate, there being hatch openings formed in the roof leading to each compartment, and removable insulated means for sealing the hatch openings.

1,952,214. ABSORPTION REFRIGERATING APPARATUS. Rudolph S. Nelson, Rockford, Ill., assignor to The Hoover Co., North Canton, Ohio., a corporation of Ohio. Application May 7, 1932. Serial No. 609,790. 12 Claims. (Cl. 62—119.5.)

1. In an absorption refrigerating system employing two immiscible refrigerants of different specific gravity, an ab-



1,952,214

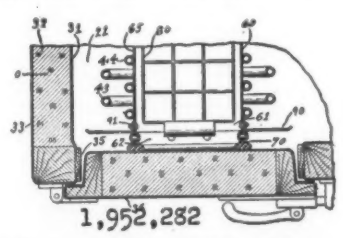
sorber, means for supplying the two refrigerants in gaseous phase thereto, means for circulating an absorption liquid through said absorber to absorb one of said refrigerants therein and cause the other to condense and separate from the absorbed refrigerant by gravity action, a vessel located above said absorber for vaporizing the condensed refrigerant, a conduit connecting the upper portion of said absorber to the lower portion of said vessel, valve seats in said conduit, valves cooperating with said seats, means for actuating said valves and a control device responsive to the levels of absorption liquid and condensed refrigerant for closing one of said valves to prevent the flow of liquid from said absorber to said vessel when the absorption liquid rises above a predetermined level, and for closing another of said valves to prevent the flow of liquid from said vessel to said absorber, when the liquid levels in said absorber recede from a predetermined level.

1,952,278. BEVERAGE COOLING AND DISPENSING SYSTEM. Thomas Peak, Philadelphia, Pa. Application June 30, 1933. Serial No. 678,513. 9 Claims. (Cl. 225—15.)

1. In a system of the class described, a source of beverage supply, means for conveying beverage from said source to a dispensing point, a closed cooling system through which cooling fluid may circulate to cool the beverage on its way to said dispensing point, means for circulating cooling fluid through said cooling system, and means for supplying compressed air to said source, comprising an air compressor operable by the circulating fluid.

1,952,282. REFRIGERATING APPARATUS. Donald H. Reeves, Dayton, Ohio, assignor to Frigidaire Corp., Dayton, Ohio, a corporation of Delaware. Application Feb. 19, 1930. Serial No. 429,766. 6 Claims. (Cl. 62—116.)

1. In combination, a refrigerator cabinet forming a cooling compartment, a refrigerating element suspended in and ex-



1,952,282

posed to the air within said cooling compartment, said refrigerating element forming a freezing compartment having an open front, the front edges of said freezing compartment being relatively narrow, a gasket seal extending around said open front of said freezing compartment, means for attaching said gasket seal to the front edges of said freezing compartment, said gasket seal having a groove therein fitting over the front edges of said freezing compartment, and a door for closing said compartment and cooperating with said gasket seal for sealing said freezing compartment.

1,952,348. REFRIGERATOR SHIPPING CONTAINER FOR CONTAINER CARS. Graham C. Woodruff, Bronxville, N. Y., assignor to The L. C. L. Corp., a corporation of Delaware. Application March 1, 1933. Serial No. 659,233. 10 Claims. (Cl. 62—91.5.)

1. A refrigerator container for container cars comprising a container body having a goods containing compartment, refrigerating means centrally disposed at the top of the container and including a refrigerant containing chamber provided with a bottom conducting surface disposed above said compartment and extending continuously beyond the refrigerant chamber to opposite sides of the compartment, and means for effecting a circulation of air between the top and bottom portions of the compartment and causing the air to flow horizontally in contact with said conducting surface beneath the refrigerant containing chamber and to said sides of the compartment and thence vertically down said sides to the bottom of the compartment.

1,952,362. AIR CONDITIONING APPARATUS. William A. Bulger, Chicago, Ill., assignor to Petroleum Heat and Power Co., New York, N. Y., a corporation of Delaware. Application July 9, 1932. Serial No. 621,542. 1 Claim. (Cl. 261—104.)

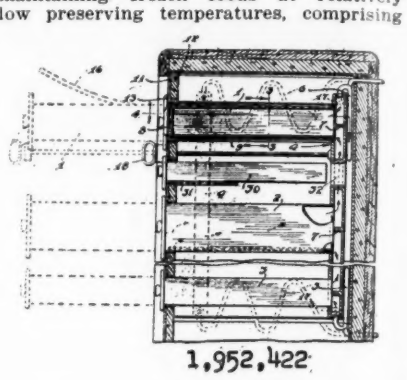
Air conditioning apparatus comprising in combination, air humidifying apparatus, an enclosure therefor having an outlet and a single inlet, a directioning device within said enclosure for controlling the direction of travel of the air entering said enclosure through said inlet, said directioning device when in one position directing air through the humidifier, and when in another position directing it to one side of the humidifier, a torque motor within said enclosure attached to said directioning device to actuate the same, means remote from the enclosure and controlled by the air remote from the enclosure for controlling the circuit of said motor, energization of said motor effecting movement of said direction device to one limit of its travel, and means operative upon de-energizing of said motor to move the directioning device to its other limit of travel.

1,952,414. METHOD AND APPARATUS FOR COOLING AIR. Robert T. Brizzolara, New Dorp., N. Y. Application Aug. 13, 1931. Serial No. 556,812. 9 Claims. (Cl. 62—133.)

2. Means for cooling air comprising a grid composed of metallic plates forming channels for the air to be cooled, said plates being mounted to support a block of ice thereon and having edges for individually penetrating the ice to produce thereby thin sheets of ice depending within the channels, power operated means for causing a flow of air through the channels to contact the plates and ice sheets within the channels for abstracting the heat from the air, and means to receive the cooled air.

1,952,422. STORAGE AND DISPENSING UNIT FOR FROZEN FOODS. Lloyd G. Copeman, Flint, Mich., assignor to Copeman Laboratories Co., Flint, Mich., a corporation of Michigan. Application Nov. 17, 1930. Serial No. 496,116. 14 Claims. (Cl. 62—89.)

14. A storage and dispensing unit for maintaining frozen foods at relatively low preserving temperatures, comprising



1,952,422

a cabinet including an apertured wall and a combined cooling and container unit positioned within said cabinet and slidable through said aperture for dispensing articles directly from the cooling unit, said unit having hollow walls for receiving and circulating a refrigerant.

1,952,553. COIL TYPE EVAPORATOR FOR REFRIGERATING TANKS. Benjamin F. Kubaugh, Louisville, Ky., assignor to Henry Vogt Machine Co., Louisville, Ky., a corporation of Kentucky. Application April 13, 1933. Serial No. 666,024. 8 Claims. (Cl. 62—126.)

3. In a refrigeration machine, a lower substantially horizontal liquid equalizing header, an upper gas equalizing header directly over and substantially parallel to the lower header, manifolds extending horizontally from and at right angles to the lower header, vertically disposed headers arranged on the side of the lower

(*Concluded on Page 45, Column 1*)

PATENTS

(*Concluded from Page 14, Column 5*)

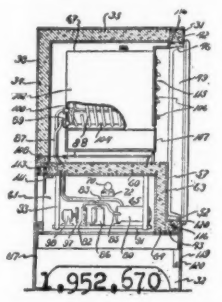
header remote from said manifolds and in substantially the same vertical planes as the manifolds, pipes connecting each manifold to the vertical header in the same vertical plane and lying in the same vertical plane, and pipes extending toward the liquid equalizing header and connecting the upper ends of said vertical headers to the gas equalizing header.

1,952,666. METHOD OR PROCESS OF FREEZING. Benjamin S. Foss, Brookline, Mass., assignor to B. F. Sturtevant Co., Hyde Park, Mass., a corporation of Massachusetts. No Drawing. Application Nov. 2, 1929. Serial No. 404,526. 2 Claims. (Cl. 99—14.)

1. The process of treating food and other material which consists in subjecting the material to the direct action of a gas at a temperature not substantially above minus 40 degrees F. and at a velocity not less than approximately one thousand feet per minute.

1,952,670. REFRIGERATING APPARATUS. Edward Heitman, Detroit, Mich., assignor to Kelvinator Corp., Detroit, Mich., a corporation of Michigan. Application May 21, 1932. Serial No. 612,780. 5 Claims. (Cl. 62—116.)

1. Refrigerating apparatus comprising, in combination, a cabinet having fixed insulated top, side and bottom walls and



being provided with an opening in a vertical wall thereof, said cabinet also including a removable, angular wall supporting structure including a vertical member and a horizontally positioned member, the lowermost end of the vertical member cooperating with the bottom wall, and the horizontally positioned member having one end rigidly secured to the upper end of the vertical member and the opposite end cooperating with one of the fixed side walls to seal the interior of the cabinet from atmosphere on the exterior thereof, a refrigerant cooling element positioned above said horizontally positioned member, and a refrigerant condensing element carried by said angular wall supporting structure immediately below the horizontal member, said angular wall supporting structure being slidably movable in said cabinet whereby said wall structure, cooling element, and condensing element may be readily removed bodily from said cabinet as a unit by horizontally sliding same therefrom through said opening in said vertical wall.

1,952,716. REFRIGERATING DEVICE. Albert L. Lambert, Philadelphia, Pa., assignor to Heintz Mfg. Co., a corporation of Pennsylvania. Application Sept. 27, 1932. Serial No. 634,999. 12 Claims. (Cl. 62—101.)

1. A cooling unit consisting of a plurality of lengths of metallic pipe secured together to form a closed system, some of said pipes being composed of a material of higher conductivity than that of the others, one of the pipes of higher conductivity being thermally connected with a refrigerating medium, and the other being exposed to a space to be refrigerated, with the pipes of lower conductivity therebetween.

1,952,729. FREEZING CONTAINER FOR REFRIGERATORS. Ethel F. Rawlings, Belmont, Mass. Application July 5, 1932. Serial No. 620,821. 9 Claims. (Cl. 62—108.5.)

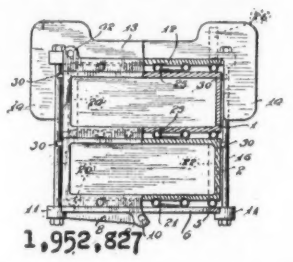
1. A freezing container for use in the freezing unit of a refrigerator, comprising a walled container having a closed bottom and an open top and slidable into and out of the freezing unit, and a plurality of removable ice molds insertible into said container from above through said open top and protected against ice from said freezing unit forming thereon by said bottom wall, said units being suspended within said container by positive interlocking engagement of their upper edge portions with a top edge portion of the container and being spaced from the container bottom, and said container bottom being formed for quick detachable engagement with the walls of the container whereby it may be removed at will.

1,952,780. HEAT EXCHANGER PROTECTING DEVICE. Norman M. Small, Waynesboro, Pa., assignor to Frick Co., Waynesboro, Pa., a corporation of Pennsylvania. Application Aug. 21, 1931. Serial No. 558,567. 4 Claims. (Cl. 62—1.)

1. In a heat exchanger comprising heads connected by vertical open-ended tubes which tubes are adapted to have a refrigerant fluid circulated about them, a compressible core resiliently mounted within the tube, clamps on the ends of said core adapted to impinge against the ends of the tube, the said core permitting expansion of the fluid within the tube to prevent bursting of the tubes, substantially as set forth.

1,952,827. EVAPORATOR. Harry E. Thompson, Detroit, Mich., assignor to Universal Cooler Corp., a corporation of Michigan. Application Feb. 3, 1932. Serial No. 590,684. 5 Claims. (Cl. 62—99.)

5. An evaporator comprising a plurality of members forming sharp freezing chambers, a refrigerant conduit having an inlet



end, said conduit adjacent the inlet end having coils in direct heat exchange contact with the outer side of one of the sharp freezing chambers, said conduit having intermediate coils in direct contact with adjacent walls of two sharp freezing chambers, said conduit having an outlet end, said conduit having coils adjacent its outlet end in direct heat exchange contact with an outside wall of a sharp freezing chamber, which wall is remote from the sharp freezing chamber wall with which the first mentioned coil is in heat exchange contact, and radiating fins in heat exchange relation substantially only with the last mentioned coil for providing a relatively great heat transfer relation between the last mentioned coil and the surrounding air.

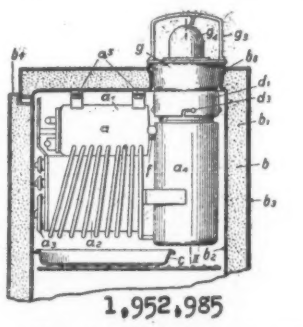
1,952,833. PORTABLE AIR CONDITIONING APPARATUS. Samuel M. Anderson, Sharon, Mass., assignor to B. F. Sturtevant Co., Boston, Mass. Application March 2, 1933. Serial No. 659,287. 6 Claims. (Cl. 62—24.)

1. A portable pre-cooler comprising a storage compartment containing cakes of ice, a tank containing water, a surface cooler, means for circulating water from said tank through said cooler, a passageway connecting with the output side of said cooler and having as its upper wall the lower wall of said tank and said compartment, and a fan for passing air over said cooler, through said passage in contact with the lower walls of said tank and said compartment, and into the space being cooled.

1,952,981. REFRIGERATOR. Robert T. Frazier, Chattanooga, Tenn., assignor to Tennessee Furniture Corp., Chattanooga, Tenn., a corporation of Tennessee. Application June 21, 1933. Serial No. 676,954. 20 Claims. (Cl. 62—72.)

1,952,985. REFRIGERATOR. Henry Hopkes, Scharfenstein in Erzgebirge, Germany, assignor to Deutsche Kuhl- und Kraftmaschinen G. m. b. H., Scharfenstein/Zschopautal, Germany. Application Oct. 29, 1932. Serial No. 640,306. In Germany Nov. 20, 1931. 3 Claims. (Cl. 62—114.)

1. In a refrigerator, a refrigerating plant wherein cooling is effected by the evaporation of a liquid refrigerating



agent, said refrigerating plant comprising, in combination, an ice producer and an ice cream freezer disposed side by side, said ice producer comprising an evaporator part, said ice cream freezer comprising an evaporator part, an agitator and a vertical shaft on which said agitator is mounted, the evaporator part of said ice cream freezer being interconnected with that of the ice producer and extending substantially to the lowest point thereof, and means for actuating said agitator.

Liberty Household Models Equipped with Frostoffs

PROVIDENCE, R. I.—Liberty Refrigeration Corp. has announced the adoption of the "Frostoff" defrosting device for the 1934 line of Liberty household electric refrigerators.

The "Frostoff" is adjusted to shut off the cooling unit regularly once every 24 hours, and to keep it shut off until all the ice on the evaporator has melted off—without melting the ice cubes in the trays.

QUESTIONS

Soda Fountain Manufacturers

No. 1540. (Importers, Queensland, Australia)—"We would be pleased if you would furnish us with recent catalogs of soda-bars and refrigeration equipment, as our desire is to keep ourselves posted with best available lines so we may begin importing them when duty and exchange problems adjust themselves."

Answer—The 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK lists manufacturers of soda fountains and all other commercial refrigeration equipment.

Carrene

No. 1541. (Manufacturer, Indiana)—"We are wondering if any attempt has been made on the part of the Grunow people to have Carrene approved by the New York Board of Fire Commissioners as an unquestionably harmless gas. Any information which you might have on the above would be appreciated."

Atlas Commercial Unit

No. 1542. (Association, Illinois)—"A member has asked us to locate a firm which either manufactures or distributes a commercial refrigeration unit under the trade name 'Atlas.' This unit is said to be intended for use in connection with a cooler for bottled drinks."

Coin Meters

No. 1543. (Distributor, Pennsylvania)—"Will you please furnish us with the names of manufacturers of coin meters as used in conjunction with electric refrigerators?"

Answer—Manufacturers of coin meters are listed on page 176 of the new 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK.

Gas Refrigeration

No. 1544. (Pennsylvania)—"I am particularly interested in gas refrigeration, and if it would not inconvenience you too much would you kindly forward me the list of all manufacturers now making gas-burning refrigerators."

Answer—The only gas-burning refrigerator on the market is manufactured by Electrolux Refrigerator Sales, Inc., Evansville, Ind.

Refrigerator Casters

No. 1545. (Dealer, Ohio)—"Can you advise me of a manufacturer who makes casters heavy enough for use under each leg of a refrigerator, so it can be rolled any place in the store."

Answer—Manufacturers of refrigerator casters are listed on page 167 of the 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK.

Refrigeration Manuals

No. 1546. (Electrical Contractor, Missouri)—"We are interested in obtaining one or more refrigeration and radio service manuals showing complete diagrams and other information regarding refrigerators and radios, and will appreciate information as to what you can furnish us."

Answer—The 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK contains specifications for all standard models of household and commercial electric refrigerators, together with all available statistical data on the industry. The Official Refrigeration Service Manual published by Gernsback Publications, Inc., 96 Park Place, New York City should also contain helpful information.

Replacement Parts

No. 1547. (Service man, Pennsylvania)—"I am a service man with several years experience and have recently started out on my own, but am having trouble getting parts for standard makes of electric refrigerators.

"Can you tell me the names of any companies selling parts for Norge, Copeland, Kelvinator, Frigidaire, and Coldspot compressors?"

Answer — Suppliers of replacement parts for various makes of refrigerators are listed on page 302 of the 1934 REFRIGERATION DIRECTORY AND MARKET DATA BOOK.

Potter Tells Dealers How To Overcome 'Hurdles'

BUFFALO—A new and novel dealer mailing piece just introduced by Potter Refrigerator Corp. bears the title "How Do You Take These Refrigerator Sales Hurdles" and has been prepared from the actual experiences of A. R. Weber, Inc., local Potter dealer.

The mailing piece is in staggered sheet or desk letter file form, with a different "sales hurdle" on each sheet. Some of the hurdles which Mr. Weber tells how to overcome are ice box allowances, "friendly" discounts, no interest charge, meter plan selling, sniping salesmen, and temperamental salesmen.

CLASSIFIED

PAYMENT in advance is required for advertising in this column.

RATES: Fifty words or less, one insertion $2.00, additional words four cents each. Three insertions $5.00, additional words ten cents each.

REPLIES to advertisements with box numbers should be addressed to the box number in care of Electric Refrigeration News, 550 Maccabees Bldg., Detroit, Mich.

EQUIPMENT WANTED

WE BUY FOR CASH any quantity of household or commercial electric refrigerators of any type, make or model. Please advise on any equipment available so that we may submit bids to you for prompt business. When writing, please mention model number and year. Box 618.

PROFESSIONAL SERVICE

NO HELP. NO FEE. Refrigeration problems, design and production, solved by thoroughly experienced consultant in strict confidence. Expert advice in new developments. Box 616.

INDEPENDENT SERVICE COMPANIES

HALECTRIC Thermostat repair service. Ranco, B & B, Two dollars each, one year guarantee, prompt service. Halectric Laboratory. 1793 Lakeview Road, Cleveland, Ohio.

COMPLETE overhaul service of all Frigidaire products—float-valves, water-valves, flapper-valves, switches, coils, receivers, compressor bodies, complete condensing units, electric motors repaired and rewound. "Gates" belts, "Ansul" Sulphur Dioxide, "Reserco" oil. Lowest prices. Workmanship and materials fully guaranteed. A trial will convince you. Refrigeration Service Corporation, 2823 N. 23rd St., Milwaukee, Wis.

Trained Men Available

When in need of practical, trained shop mechanics, installation or service men, patronize this FREE Placement Bureau. We have competent, trained graduates available in every locality, to meet your requirements. With or without experience. No charge to the men or to you. Write, phone or wire.

Utilities Engineering Institute
Placement Division
Wells at Kinzie Street, Chicago

Use the MASTERCRAFT REFRIGERATOR PAD and CARRYING HARNESS

They will deliver your refrigerators—

1. *More easily*, because adjustable features give neat, snug fit and sturdy handles make easier handling.

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3. *More economically*, as adjustability feature requires only one pad or harness, and prices are

ONLY $7.50 for Pad
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For quantity of four or more, 50¢ less for each. Name of refrigerator lettered on pad without charge. Prompt shipment from stock.

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3815-3825 Cortland Street, Chicago
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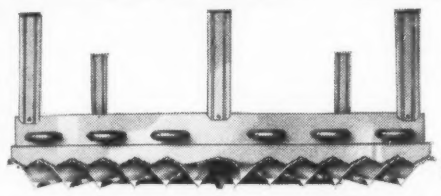

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THE DAYTON RUBBER MFG. CO.
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The world's largest manufacturer of V-Belts

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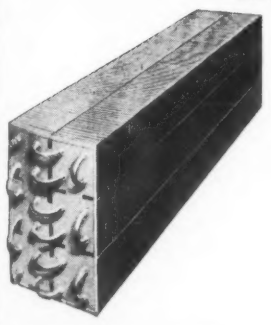

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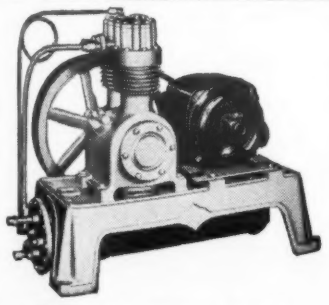

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